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THE PROBLEM OF PRECOGNITION

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INTRODUCTION

IN a lecture at Duke University dealing with psychoanalysis and parapsychology the speaker characterized the former as 'theory without facts' and the latter as 'facts without theory' (21). Whatever may be said about the first assertion, it is certainly true that intelligible explanations of psi phenomena are conspicuously lacking.

It is probably also the case that much of the reluctance of other members of the scientific community to consider seriously the findings of psychical research is due to the absence of an explanatory model and, more particularly, a model that makes sense to them. That is to say, one that links up with more familiar ones or at least employs similar basic concepts. As Dr George G. Simpson remarked in *Science*, 'the claims will not carry conviction unless some credible explanation is produced' (22).

It is not the first task of the psychical researcher to be a public relations man. His main concern is to gain understanding and control of the phenomena. For this undertaking, however, he needs to relate the observations to those in other areas of science. It is known that to some extent at least, psi phenomena are influenced by familiar physical and psychological conditions. In the search for added means of understanding and control, the parapsychologist is hopeful that the overlapping fields will broaden. In selecting the building blocks for his theories, therefore, he knows that a *useful* explanation is likely also to be an *intelligible* one.

Attempts to talk sensibly about psi are frustrated by the pheno-

menon of precognition, the 'cognition of a future event which could not be known through rational inference', as one source defines it (9). *Prima facie*, the precognitive experience is a response to, and hence, effect of, events which have not yet come about. The alleged process is conspicuously out-of-step with other natural ones and the task of reconciliation seems a hopeless one. Several skilful philosophers have attempted it (e.g. see the discussions of Professor Broad, Ducasse, and Flew in *The Philosophy of C. D. Broad* (20)). Leaving linguistic niceties aside, we can say that they accept the definition of precognition quoted above; that is to say, they operate from the premise that in cases of precognition, future events affect the present. Their special contribution is to define words as 'cause', 'time', and 'cognize', so that this assertion will make sense. But these operations do not bring precognition into closer alignment with the world-picture of present-day science: they imply that whatever semantic status the future is given, it somehow exists in the present. The remainder of science (excepting parts of micro-physical theory, where brief temporal reversals enter into the equations) rests on the assumption that it does not, but is created through present actions.

In this paper I shall attempt to show that there is no need to suppose that the phenomenon we have come to know as precognition involves a reversal of the cause-effect relationship.

EXPERIMENTAL WORK

Experiments in precognition began in 1933 at Duke University. The targets were packs of cards, shuffled by hand after the subject made his forecast. It was soon realized that the person who mixed the cards might arrange them with the aid of ESP to match the subject's guesses. A shuffling machine was therefore introduced which mechanically randomized the cards before their order was compared with the responses. A new difficulty soon arose. When results began to accumulate from the experiments, begun in 1934, in which the subjects 'willed' falling dice to show certain sides, the possibility had to be faced that the card scores were produced similarly. Perhaps the subjects used PK on the cards in the machine and thereby caused them to appear in the predicted order.

The Duke parapsychologists then conducted a series of experiments

in which the subjects attempted to predict the order of cards as they would be after being shuffled and cut mechanically, the number of shuffles and the point of cutting being determined by printed temperature reports in a specified newspaper for a specified day in the future.

It was believed that this would at least reduce the force of the counter-hypothesis of PK sufficiently to put it out of consideration. Two experimental series conducted on this plan gave significant results (19).

The PK hypothesis was the less likely explanation since, the temperature itself would have to be modified by the hypothetical effect in question and this seems considerably more incredible than that the machine might be influenced directly (18).

Professor C. W. K. Mundle, in his review of the evidence for pre-cognition raises two objections (13). First of all, he points out that the results in the two series in question (8, 18) are not impressive. The evidence for the occurrence of precognition does not consist in the number of hits, but only in their distribution, and even this is not highly significant. Secondly, Mundle says that, had the findings been more convincing, PK might still explain them. For,

the temperature readings were presumably determined by someone looking at a thermometer and a thermometer is a mechanical device no more complicated than a card-shuffling machine. If we admit, as Rhine does, that shuffling machines may be influenced by PK, why should we assume that thermometers are immune from such influence? In Rhine's experiment, a difference of one degree in a temperature reading would make a vast difference to the final order of the pack (13).

Dr S. G. Soal and Mr F. Bateman make the same point (23) and one might also speculate that PK (or ESP) could have influenced some of the human or mechanical processes involved in printing the temperature in the newspaper.

In the same paper, Mundle considers the Soal and Goldney experiments (24) and comes to a similar conclusion. The forward displacement effect might have been the result of a psi influence from the subject directed to the mind or brain of the person who determined what the next card would be. Soal himself recognizes this possibility (23).

However, in Mr Whately Carington's drawing experiments (4, 5) Mundle finds something which goes beyond non-precognitive ESP and PK. This has to do with *the clustering of hits around the target*. An inverted 'U' or rather 'W' curve was produced which represents the distribution of correct responses. The guesses which were intended to correspond with the target and which did so, constitute the central dip of the curve. The responses which were made for the drawings which came before or after the actual target, but which nevertheless resembled it, constitute the two caps of the curve. The highest scores were on pictures twice

removed from the targets, though the hits on the latter were also significant. The only way in which we can account for the curve in terms of ESP and PK, Mundle suggests, is by saying that the 'efficacy of this complex waxes and wanes in phase with the "hit curve"'. He prefers to regard the temporal clustering of hits 'as the several effects of a single known event which occurred at the (temporal) centre of the cluster', and draws an analogy with wireless transmission to explain his idea:

If a number of radios were tuned to a certain wave length at a certain time, an observer would be able to witness similar events, say, transmissions of music from a symphony orchestra, in the vicinity of them all. From this he would conclude 'even if he were completely ignorant of the *modus operandi* of wireless transmission, that they were causally connected'. Furthermore, by taking notice of the volume of receivers at different locations, he might infer the existence and even the location of the transmitter.

Mundle says it might be argued that ' "Spatial (or spatio-temporal) clustering around a central event or process of a set of events or processes which are, structurally and/or qualitatively, similar to each other"—is part of what we mean by "causal connection"'. He goes on to suggest that 'Carington's results reveal another criterion of causal connections: a *purely temporal* clustering, around a central event or process, of a set of events or processes which are, structurally and/or qualitatively similar to each other'.

Whatever the merits of such a criterion may be, there are several ways to account for Carington's curve without adopting this view of time and causality. One of the subjects, rather than Carington, might have been the actual agent. It is evident from the description of the experimental procedure that much was left to the arbitrary choice of the experimenter in the matter of selecting targets (namely in deciding which words in the dictionary were 'reasonably drawable', and how to draw them). If one of the subjects was the agent, Carington (and the other percipients) might have drawn a picture which would have features in common with the subject's drawing for that day, with the picture the subject made previously, and with those he consciously or unconsciously intended to produce later. If this is what took place, a comparison of responses and targets would give rise to a curve such as Carington's.

Another explanation for the hit distribution has been advanced by Mangan (12). The person who judged the degree of similarity between originals and responses might have created the effects by ESP guessing of which drawings were intended for which targets. The displacement effect produced by matching originals with

responses would then be of the non-precognitive type shown by a card-calling subject who responds to the symbol one or two cards down in the pack instead of the one the experimenter is holding. Finally, as Mundle, himself, realizes, Carington's W-effect may not have been produced by many individual curves: perhaps some of the subjects contributed the cap of the curve, another section, one leg, and a third, the other. If this happened, the distribution of scores can again be explained in terms of contemporary ESP. In brief, Carington's results have little, if any, bearing on the precognition question.

Since these tests, four experimental series with a more advanced design have been carried out at Duke University (1, 2, 12, 16). Before we discuss them, it should be pointed out that the results, though statistically significant, fade somewhat when seen against the background of unpublished insignificant work. After the completion of the first two, the combined result reached $P = 0.06$, which is little better than chance (17). Though the two later series will have improved this figure, the evidence from precognition testing is not yet nearly as convincing as the results of the non-precognitive ESP work.

In these tests a calculating machine was used to arrive at the targets. The cards were arranged according to series of numbers printed in tables of random numbers. The crucial question is how the place in the tables was selected from which to copy the card-order. The procedure used in all these series (with minor variations) is described as follows by Mangan:

A place of entry into tables of random numbers is determined on a calculating machine in the following manner. Four three-digit numbers are obtained by throwing 'bridge' dice (with ten faces) and are multiplied together. This product may include the billion values. This is then multiplied by the digits in reverse order. The resulting product is divided by a four-digit number made up of the middle digits of the four original three-digit numbers. The individual digits of the quotient are added and the resulting sum is used as an index number to select a specific place in a table of random numbers (12).

This was done after the subject made his guesses. Mangan writes, 'The complexity of the computations would appear to place the determination of the point of entry into the tables beyond the range of human control' (12).

But, the human brain contains a calculating machine which is much more powerful than the parapsychologist's. It is not generally under conscious control (when it is, we say about a person that he is a 'calculating genius'). It works below the threshold of awareness and furnishes rapid guidance to the highly

complex perceptual and motor activities of everyday life. Dr K. Lorenz suggests that it is this calculator which underlies 'insight' or 'intuition' (8), the sudden understanding of problems which often are highly complicated. He notes the difference between these operations and those of conscious logical inference, and says about the former that 'they are, in very many respects, much more akin to the functions of mechanical calculating machines'.

Lorenz proposes that it is this 'computer' which underlies intuition, thereby accounting for the speed of the process, and for the fact that it is unconscious. He says,

the unconsciously working computer of our Gestalt perception is distinctly superior to all consciously performed computations. The superiority is due to the fact that intuition, like other highly differentiated types of Gestalt perception, is able to draw into simultaneous consideration *a far greater number of premises* than any of our conscious conclusions. It is the practically unlimited capacity for taking in relevant details and leaving out the irrelevant ones which makes the computer of this highest form of Gestalt perception so immensely sensitive an organ (11).

According to this theory, everybody is a potential calculating prodigy. When the 'computer' is applied to tasks other than perceptual and motor coordination, this potentiality is realized, providing a startling example of intuition or an instantaneous solution to complex mathematical problems of the type incorporated in recent precognition experiments.

We need not suppose that all the calculations start from scratch. It is possible that the subject in the past has solved some of the problems which make up the new one. It would be a matter of recognizing the known elements in the new situation, to recall the solution to them, and then to carry out whatever additional calculations are called for. This seems to have been the method of Finkelstein, the Polish calculating genius (3).

There are, needless to say, likely to be many series in a book with random numbers which will give statistically significant correlations if matched with the subject's guessing columns. If the person is to be able to use one of these series, he must calculate which four three-digit figures manipulated as shown above will eventually produce the number corresponding to one of the desired places of entry in the tables. Again, there are, of course, several sets of four-digit figures which will produce the same final sum. Finally, he must by PK (or skill) cause the dice to fall so that they show the required figures.

The calculating machine is only one of the barriers incorporated into precognition tests. The die throws form another. It seems

that the person who is responsible for the final results must be an exceedingly good PK subject. But the physical influence on the dice need neither be strong nor accurate in its aim to achieve significant correlations. For instance, let us suppose that no psi influence is exerted till the throw of the last of the twelve dice (to obtain the four three-digit numbers). Each of the ten faces of this die would be likely to lead to a different place in the table and approximately half of these entries would give a positive deviation if matched with the subject's guesses, and about half a negative deviation. Say, the 1, 4, 6, 7 and 0 faces of the last die might result in positive deviations, and if such were his aim, he would try to have the die come up with any one of these faces. Consequently, this person would not have to be unusually good at PK in order to obtain a significant total score. He need only be able to score some hits with this last die where he has a 50-50 probability of success by chance.

The die throws and the calculations are always done after the guesses have been made, and generally at a time unknown to the subject and at a remote location. It is not known at present whether PK results can be obtained at a distance. Exploratory researches indicate that a short separation between subject and dice is no impediment (7). However, the process is roughly the same whether we suppose that it is the distant subject or the present experimenter who is responsible for the results. In the former case this person would have to know by ESP which columns in the book of numbers would match his guesses and then aim for the die faces which he calculates will give the correct entry point.

If the experimenter is the actual subject in the test, the selection of the die face would be determined by two sources of information, one from the tables of random numbers by ESP or unconscious memory, and the other from the guesses of the 'subject' which are ascertainable only by ESP. This type of combination of information from two sources is not unknown in the literature and was demonstrated by the 'split agents' experiments with Mrs Stewart in which she used her ESP to draw on information from two persons to make one response (23).

Our exposition is based on the assumption that the 'PK targets', i.e., the most advantageous die faces, can be known with the aid of ESP. It is suggested by a series of exploratory PK tests with concealed targets that ESP can assist PK. In trials with cup thrown dice, the subjects of Dr Karlis Osis obtained significant results when aiming for concealed targets (15). PK experiments indicate, also, that subjects do not know when they are performing.

It is not difficult to suppose that a person may not even realize that he is the 'subject' in a PK test. The fact that results in precognition runs hug the ground in the manner of psychokinesis and never reach the heights of ESP trials, tends to confirm the argument that the process is based on PK.

NON-EXPERIMENTAL CASES

The term 'spontaneous', as a description of psi in everyday life, is misleading. Spontaneity is as characteristic of laboratory phenomena as of psi in ordinary situations. Conversely, also intended or anticipated occurrences are encountered in both areas. It would be more accurate to distinguish between anticipated experimental cases, anticipated non-experimental cases, spontaneous experimental cases and spontaneous non-experimental cases.

Though it is questionable whether non-experimental cases constitute proof of psi, they indicate it sufficiently to be given serious attention in a discussion of the nature of parapsychological processes. Careful studies have been published by the London and New York Societies, and the Duke Laboratory has a quantity of cases received from apparently sane and serious persons.

Non-experimental cases of precognition have little in common with laboratory work except that they, too, rely on ESP and PK. An examination of the non-experimental material requires some comments on the modus operandi of these familiar forms of psi. The two main types of ESP are clairvoyance and telepathy. In a successful clairvoyance experiment the subject produces a description (or significantly avoids it) of some physical event or state. His report appears to be due to a response to the physical characteristics of the object in question. But in many clairvoyance tests there are no known physical stimuli to which a percipient could respond. In the common 'down through' (DT) test, for example, the cards are left in the pack undisturbed, in this way precluding the operation of their light-reflecting properties as the effective stimuli.

Similarly, in telepathy we are not dealing with familiar stimuli. This is true whether we suppose that the target consists of non-physical mental occurrences or of brain processes reflected in or by mental events. In the latter case we are faced with a situation similar to the DT trials and in the former we say, in effect, that the subject responds to other causal agents than those known to belong to living brains.

This gap in our conceptual picture can be filled by postulating

the existence of psi fields along with the electromagnetic and gravitational ones. These fields are composed of psi elements whose function is analogous with the electrons and other constituents of electromagnetic fields. As with known fields, the psi field of an object does not lie in it but in a surrounding spatial continuum. It interacts with the psi fields of other bodies (or is part of a whole embracing them all, which is saying the same), and it also interacts with the object's more familiar fields. In ESP the physical fields of the target object (inanimate, as the cards in a clairvoyance test or animate, as in telepathy) influences its psi field, the latter affects the psi field of the percipient whose physical fields are consequently changed, resulting eventually in a response that reflects the target situation. In PK, the modification of the brain's physical fields, induced by a person's volitions or intentions, brings about the change in his psi field which, in turn, interacts with the psi fields of objects in his environment, e.g. dice, whose physical fields are then also affected.

The reduction of all psi phenomena to one is a by-product of this addition to our terminology. It is primarily intended to focus attention on certain spatial and temporal relationships in the data which have escaped notice or been regarded as anomalous. These will be discussed elsewhere.

In precognition, psi elements are effective twice, first, as they affect a person's nervous system, causing him to have the precognition and secondly, as their influence is exerted on other physical systems, resulting in the 'verification' of the precognition. The temporal lag, which is due to the time it takes these forces to build up an observable effect on the physical conditions may vary. Though the verifying events in precognitions are influenced by psi fields, the reports of non-experimental cases do not refer to anything unusual with regard to the means by which precognitions are fulfilled. If the PK-type force has escaped notice, it is likely to be small. This raises the question, how the gross incidents arise.

The following case (14) was reported to Myers by Mrs Atlay, wife of the Bishop of Hereford.

I dreamt that the Bishop being from home, we were unable to have family prayers as usual in the chapel, but that I read them in the large hall of the Palace, out of which, on one side, a door opens into the dining room. In my dream, prayers being ended, I left the hall, opened the dining room door, and there saw, to my horror, standing between the table and the sideboard, an enormous pig. The dream was very vivid, and amused me much. The Bishop being from home, when dressed I went down into the hall to read prayers. The servants

had not come in, so I told my governess and children, who were already there, about my dream, which amused them as much as it had done me. The servants came in and I read prayers, after which the party dispersed. I opened the dining room door, where to my amazement, stood the pig in the very spot in which I had seen him in my dream. With regard to your question as to whether I could have heard the pig in my sleep, he was then safely in his sty. . . . It got into the dining room in consequence of the gardener being engaged in cleaning out the sty while the servants were at prayers; they having left every door open, the pig met with no obstacle on his voyage of discovery.

Myers' report includes a statement from the governess to the effect that Mrs Atlay told her the dream before the service, that the sty was a considerable distance from the palace, and that the pig got loose while Mrs Atlay was reading prayers; the gate had not been locked securely.

Perhaps the psi elements originated with Mrs Atlay: things may have been a bit dull in the household. A pig in the palace might be a welcome diversion! But how can psi elements, whatever their origin, have brought about the animal's escape to the dining room? Non-experimental cases seem to present a stronger physical force than we encounter at the PK machines. For a short period of time it appears that Mrs Atlay applied as great PK abilities as an alleged poltergeist agent. A physical effect of this magnitude would have been observed easily. Yet, in this as in other precognition cases, no one reported anything uncanny or otherwise unusual accompanying the verifying event.

Nor is there evidence that anyone associated with the precognition had noticeable PK powers. However, the physical effect of the psi elements need not be stronger than that responsible for laboratory results. The PK we meet in the laboratory emerges when other causal processes cancel each other out, as with tumbling dice which, if not biased, are under equal 'pull' from their six sides. But the devices constructed by parapsychologists and statisticians are not likely to be the only (macro-) physical systems in the world which generate random events. There are probably numerous instances where two or more physical forces cancel each other out, leaving it to chance variations—or perhaps a psi effect—to tip the scales.

In the Atlay case and similar ones, we need not suppose that there was an effective psi influence on the stable physical systems. The psi elements affected only the weak parts of the barriers which confined the pig. The gate lock may have been on the verge of giving way, requiring only a small effect to do so; a slight influence on the animal's brain may have stimulated its desire to

escape and directed its path. In this and similar precognition cases it is possible to assume that the actual (verifying) events were shaped by the same type of minute physical forces as operate in experimental PK. The rarity of veridical precognitions is accounted for by the hypotheses that the influences are no stronger and as erratic as laboratory PK, and that they are likely to be effective only on unstable physical systems.

At present there is no way of knowing when an effective series of psi elements has been launched or which dreams or other mental experiences are psychically caused. Psi elements seem to activate existing neural pathways and to draw on the percipient's private stock of mental images. This accounts for the fact that precognitions and other ESP experiences are usually indistinguishable from those with a wholly subjective origin. It has puzzled some investigators that a percipient occasionally seems to know or suspect that a particular experience was parapsychological. A study of the cases reveals that this conviction is based on a secondary rational judgment and varies with the subject and circumstances under which the experience arises.

In the Dommeyer case (6) the precognition presented itself as a dream (of excreta) which the percipient, Mrs Dommeyer, reserved as a symbol for a particular occurrence (the unexpected arrival of money). Whenever she experienced the image, Mrs Dommeyer knew that the event would follow.

A second type, of which the Levyns case (10) is an example, consists of experiences in which a hunch or image intrudes on the subject's attention and, not making sense in terms of current thoughts or activities, is regarded as parapsychological. In February, 1949, Mr J. E. Levyns, Chief Accountant of the Cape Provincial Administration, South Africa, accompanying the Under Secretary, Mr E. A. Bouchier, journeyed by car to Bloemfontein. Shortly before 3 p.m., at the outskirts of Laingsbury they passed a bus. Mr Levyns recalls:

As I slowed down to pass the bus, a small Coloured girl dashed out from between two of the houses, making for the bus. I saw that the only chance of avoiding running over her was to accelerate, which I did. The car being large and new leapt forward and the child passed unharmed behind us. It was the closest escape from killing a human being that I had ever had in my motoring experience, which began in 1930.

On 5 March, when he returned home, Mrs Levyns asked whether he had been involved in an accident, explaining that on 28 February, shortly before 2 p.m. when relaxing after lunch, she suddenly heard his voice saying clearly, 'My God! I nearly hit that

child.' The events were reported by Mr and Mrs Levyns and confirmed by Mr Bouchier.

In a third type, actual events begin to duplicate an earlier mental experience and from this the percipient infers what will follow. The Lady Z incident (14) reported to Myers, is of this kind. The night before a visit to a relative, planned for the next day, Lady Z dreamt that her brougham turned up one of the streets north of Piccadilly and then that she was herself standing on the pavement, holding her child and watching the old coachman fall off the box and hit his head on the road. The next day when they reached Piccadilly on the homeward journey, Lady Z noticed that the coachman was leaning back in his seat as if the horses were pulling. As they turned up Down Street, she suddenly remembered the dream. She jumped out of the brougham, caught hold of the child, and called a policeman who caught the coachman before he fell off the box. He was saved from falling and striking his head on the ground, and came to no harm.

This account is of interest also because it is an example of a quite large group of cases in which the subject successfully prevented part of the precognized situation from taking place. Lady Z predicted the *probable* course of future events. The precognitive dream was responsible for her interference with the events as they were foreseen. Precognitions of this kind are a special form of inferential prediction.

In the three cases mentioned above there is no reference to the source of the operative psi elements. Research on non-experimental cases can be described as investigations to discover what was omitted from the reports. Something has escaped notice or we should not still be groping for means to control and understand the phenomena. I suggest that the undercover agents are psi elements generated by motivational factors. In the Levyns case, for example, the girl may have been the subject of feelings of aggression (perhaps even self-directed or masochistic). Such wishes, transformed into a PK-like force, may be as fleeting and shallow as those which govern the fall of a laboratory die, and, like these, still produce results. In some instances the effective psi elements may be triggered by a collective effort. Further work on joint agency in psi tests will have to be carried out before this idea can be pursued.

Precognitions often consist not only in foreseeing an event such as a death, but the event may occur in a situation which is reproduced with photographic exactness by the veridical occurrence. The Levyns case would have been typical if the impression had come in terms of an accurate visual image of the car incident.

It is difficult to suppose that the agent's desire incorporates such details. Moreover, the precognitive experience may include a setting, as a house or landscape which exists at the time of the precognition, though (normally) it is unknown to the subject. It cannot reasonably be postulated that this background situation is molded by a PK influence since, as a rule, the desire expressed in the central event could not have been in existence early enough to shape the surroundings by PK. Precognitive experiences of this kind benefit from the feed-back mechanism which results from the interaction of the two psi fields. The psi elements from the agent, which are aimed towards, say a certain person are 'corrected' by the psi field belonging to the situation selected as the scene for the event.

CONCLUDING REMARKS

This discussion is divided into two sections. In the first I show that experimental precognition results can be understood in terms of conventional psi processes assisted by biological mechanisms. In the second part I discuss non-experimental cases in the light of a closer scrutiny of ESP and PK. It is shown that the precognitive experience and the verifying event can be the two effects of the same psi forces.

The question how psi works must be approached from two complementary points of view. In one, the emphasis is on psi stimuli and influences, in the other, on the response. Psychical researchers have neglected the stimulus object in favour of the responding subject. The response-orientation has not been barren; it has led to a large body of tests which show persistent though slight relations between ESP responses and psychological factors.

Current concepts in the field relate to the psychological programme. Further steps towards control and explanation will benefit from the recognition that the abilities discovered by psychical research imply extensions of the physical world. On the theoretical side the concept of psi field and its corollaries provides a framework within which psi phenomena are made intelligible. On the empirical side it will enlarge the scope of investigation by focusing on aspects of the psi process which have been overlooked.

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THE GEOPHYSICAL THEORY
OF POLTERGEISTS

BY A. D. CORNELL AND ALAN GAULD

DURING the last few years it has several times been strongly urged that the strange noises and alarming movements of objects which are said to occur in poltergeist cases can be explained in a perfectly simple and natural way. These phenomena are not fraudulent, and still less are they the handiwork of malignant or mischievous spirits; they are the results of geophysical forces. Some poltergeist cases are caused by small earthquakes, or by vibrations from underground streams or tides; others occur when an underground stream which runs beneath a house has been blocked by some accident, and the resultant accumulation of water, probably reinforced by a downpour of rain, tilts the house sufficiently to cause weird noises and the movements of objects; still others happen when a house is built on shifting foundations and subsides under its own weight to the sound of tortured timbers and rupturing brickwork.

The keenest exponent and the most energetic defender of this theory has been Mr G. W. Lambert; but it has also been seriously considered, even if not altogether accepted, by Dr E. J. Dingwall and Mr T. H. Hall in their recent book *Four Modern Ghosts*. We have not space to expound the theory properly, and can only refer readers to the book and the articles concerned. Mr Lambert clearly believes that it can explain the great majority of poltergeist cases, for he says: 'I have yet to find a violent poltergeist case where the subterranean conditions make the geophysical theory manifestly inapplicable.' (Lambert 1959, p. 120) We do not agree with Mr Lambert; we think that the geophysical theory can explain only a very few poltergeist cases, and we shall put forward two kinds of objection to it:

1. Geophysical forces could not produce the kinds of phenomena reported.
2. It is based on inadequate evidence.

1. THE MECHANICS OF POLTERGEIST PHENOMENA

The only poltergeist phenomena which we are going to discuss are movements of objects, and certain kinds of noises. We shall

not include in our examination the apparently paranormal occurrence of whispering, tearing and ripping of clothing whilst being worn, the pulling off of bedclothes, incendiary effects, boiling of cold water, changing of direction of an object whilst in flight, and the slow levitation and descent of heavy objects. All these phenomena are said to have occurred in poltergeist cases, but we do not think that any of them can be explained as the results of known physical or geophysical forces. Still less do we think that the intelligence seemingly displayed by certain poltergeist phenomena can be so explained.

The Mechanics of Typical Poltergeist effects

We shall begin by calculating the frequency and amplitude of the vibrations which would be necessary to produce object movements of the order of magnitude reported in some classical poltergeist cases—e.g. the Worksop, Wem, Portland Oregon, Ringcroft and Tedworth cases.

Our first four examples are of movements of objects which are actually in contact with the wall of a house, and which are standing upon a mantelpiece or ledge several feet above the floor. In such cases the velocity (V) in feet per second with which the object would have to be projected for it to move a given distance can be calculated from the formula $V = \frac{4x}{\sqrt{y}}$ where x is the horizontal distance in feet which the object travels, and y is the height in feet above ground from which it started. This formula assumes that the force propelling the object acts horizontally, but since the seismic vibrations with which we shall be chiefly concerned are predominantly horizontal, it seems a reasonable assumption. The frequencies and amplitudes of the vibrations which will propel an object with a given initial velocity can be calculated from the formula $A = \frac{1.91V}{f}$.

Here, A = amplitude in inches and V represents the highest velocity in feet per second with which the source of vibration moves; in simple harmonic motion, its highest velocity is attained half way between its two limits of motion. f = the frequency in cycles per second. Since air resistance can be neglected, the sizes and weights of the objects concerned do not matter.

Examples 1 and 2

A small object resting in contact with the wall on a ledge 6 ft above the floor is thrown a distance of 6 ft (example 1) and 9 ft

(example 2) from its original position. Calculations show that the initial velocity of the object must be 9.8 ft/sec in example 1, and 14.7 ft/sec in example 2. These phenomena could only have been produced by vibrations from the following ranges of frequency and amplitude:

	EXAMPLE 1	EXAMPLE 2
Frequencies (cycles per second)	Amplitude (in inches)	Amplitude (in inches)
5	3.74	5.61
15	1.25	1.87
30	0.62	0.94
100	0.19	0.28
150	0.12	0.19

Examples 3 and 4

An object standing against the wall on a ledge 3 ft above the floor is thrown a distance of 6 ft (example 3) and 9 ft (example 4). The necessary initial velocities are 13.9 ft/sec and 20.8 ft/sec respectively. The frequencies and amplitudes necessary to produce these effects are:

	EXAMPLE 3	EXAMPLE 4
Frequencies (cycles per second)	Amplitude (in inches)	Amplitude (in inches)
5	5.29	7.94
15	1.76	2.65
30	0.88	1.32
100	0.53	0.40
150	0.18	0.27

The smallest initial velocity mentioned in the above tables is in excess of 8 ft/sec. We may therefore say that the *minimum* amplitudes of horizontal vibration required to produce the kind of phenomena we have been discussing are as follows:

TABLE I

Frequency (cycles per second)	Amplitude (in inches)
0.1	152.8
1.0	15.28
5	3.06
10	1.52
30	0.51
100	0.15
150	0.10

However, not all the paranormal movements which are said to occur in poltergeist cases can be set down as the results of horizontal vibration. Some of them could only have been produced by vertical vibrations, and we shall now consider a couple of such cases.

Example 5

Stone throwing figures prominently in many poltergeist cases. (In 80 out of the 330 unexplained poltergeist cases listed in Carrington and Fodor's *The Story of the Poltergeist* stone-throwing is said to have occurred.) Working on the principle that what falls downwards must have been thrown upwards, the following amplitudes of vertical vibration will be required to project a stone from the floor of a room to a ceiling 12 ft high. (The initial velocity needed is 28 ft/sec.)

Frequency (cycles per second)	Amplitude (in inches)
5	10.59
15	3.53
30	1.76
100	0.53
150	0.35

Example 6

A teacup flies off a table standing in the middle of a room and is dashed to pieces against the opposite wall. In this case, both vertical and horizontal vibrations would be necessary; the forces involved would be enormous, and are nearly impossible to calculate. The behaviour of the table would be such as to leave no doubt in the minds of the observers that an earthquake had taken place, provided they lived to tell the tale.

If the cup were in contact with a wall of the room, the initial velocity required to throw it 10 ft to hit the opposite wall above floor level would be 25.3 ft/sec. The necessary amplitudes would also be of a high order, for example at 5 c.p.s., 9.66 in. and a 150 c.p.s., 0.32 in.

Vibrations: General

There are two types of vibrations, *free* and *forced*. Free vibrations occur when an object is subjected to a sudden blow or impulse. These vibrations die out in time, and are said to be at the *natural frequency* of the object. *Forced* vibration is produced in an object by some external continuously vibrating source.

Under such conditions the object will vibrate at the same frequency as the source.

Vibrations resulting from a hammer blow or a continuous forcing source will produce Vertical and Horizontal movements. Usually one or the other is predominant. In earthquakes horizontal vibrations are predominant except at the epicentre.

Sources of Vibrations

What kinds of geophysical forces could make houses vibrate? There seem to be these possibilities:

1. Microseisms caused by running water, underground streams, etc.
2. Microseisms produced artificially, e.g. by traffic.
3. Earthquakes proper.

We shall consider each of these in turn.

1 and 2. Natural microseisms due to tidal action do not exceed a frequency of 5 c.p.s. and those due to water running in streams, underground channels or over dams or waterfalls, hardly ever exceed 10 c.p.s. In all these cases the amplitudes of vibrations produced are much too slight to produce the phenomena under discussion. It should be noted that the meeting of flood water in a sewer, and a high tide in the estuary into which the sewer empties would not cause an increase in the frequency and amplitude of the vibrations.

TABLE II

Source of Vibration	Amplitude		Frequency (c.p.s.)	Notes
	Vertical	Horizontal		
1. Gunfire.	5·6	3·3	10	Measurements in office 52 ft away.
2. Person walking on floor of house.	5·6	—	10-20	Vibration of bedroom floor.
3. Drop Stamp.	1·85	0·40	6-14	Measurement in works area near 18 ton 'Massey' hammer.
4. Impact Testing Machine.	2·2	—	20-25	Measurements on concrete floor 16 ft away.
5. Road traffic.	0·14	0·06	17-25	Measurement in building close to road.
6. Underground railway.	0·20	—	10-30	Measurement in basement of building.

The amplitudes and frequencies of the vibrations produced in houses by various artificial microseisms are shown in the above table which has been adapted from that given in the B.R.S. Digest No. 78. The amplitudes are given in *thousandths of an inch*.

It can be seen from a comparison of Table II with Table I that these vibrations are far too feeble to produce the phenomena we are considering. Most of the vibrations given in this table are smaller than those which are caused by a person slamming a door or walking across a room.

It could just conceivably happen, however, that the frequency of a microseism might coincide with the natural frequency of the ground upon which a house is situated. Should this occur a state of resonance would ensue and the amplitudes of the vibrations in question might be greatly increased.

Exact measurements of the natural frequencies of soils have been made by the German D.E.G.E.B.O. Institute (Tschebotarioff 1951, p. 573); minimum and maximum examples are as follows:

TABLE III

Nature of Soil	Natural frequency (c.p.s.)
1. 6 ft peat over sand	12.5
2. Gravelly sand with clay	19.4
3. Moist tertiary clay	21.8
4. Uniform medium sand	24.1
5. Coarse sand	26.2
6. Dry tertiary clay	27.5
7. Limestone undisturbed rock	30.0
8. Sandstone undisturbed rock	34.0

It is clear from these figures that the vibrations produced by tides and by running water are of too low a frequency to produce a state of resonance in the neighbouring ground (particularly if the ground is limestone, which has rather a high natural frequency); but it does seem possible that certain of the artificial microseisms *might* do so.

3. *Earthquakes.* There is not the slightest doubt that large earthquakes can produce vibrations capable of displacing objects.

The Effects of Vibrations upon Houses and upon Human Observers

We shall now try and demonstrate that earth tremors, whether natural or artificial in origin, could not possibly produce object movements of the kinds in question without (a) damaging or destroying the buildings in which the object movements take place, and (b) being recognized as earth tremors by anyone in the

vicinity. That these contentions are generally accepted by seismologists can be seen by merely glancing at any of the recognized scales which define earthquake intensity in terms of the kinds of phenomena reported; for instance the modified Mercalli scale given by Richter (p. 137).

It is commonly asserted that horizontal earth vibrations whose maximum acceleration is $0.1g$ (where g is the value of the acceleration due to the earth's gravity, i.e. 32 ft/sec^2) or greater will cause damage to ordinary brick and timber houses (accelerations approaching g being liable to cause the destruction of almost any house), and that vibrations of acceleration $0.001g$ and above are perceptible by human observers (Richter, p. 26). By maximum acceleration is meant the greatest rapidity with which a vibrating object changes its velocity of motion; maximum acceleration is reached at each limit of its swing. The maximum acceleration, in units of g , of an object moving with simple harmonic motion is $0.104f^2A$ where A is the amplitude of motion in inches. Earthquake vibrations are not all simple harmonic motions, but they can be represented as such by Fourier analysis. Table I above showed the *minimum* frequencies and amplitudes required to produce poltergeist movements of the kind described in examples 1 to 4, and we shall now rewrite Table I, calculating the maximum accelerations for vibrations of the frequencies and amplitudes in question.

TABLE IV

Frequency (c.p.s.)	Amplitude (ins.)	Acceleration (approx.)
0.1	152.8	0.15g
1	15.28	1.6g
5	3.06	7.8g
10	1.52	15.0g
30	0.51	45.0g
100	0.15	150.0g
150	0.10	227.0g

The second line in this table corresponds very roughly with the kinds of frequencies and amplitudes encountered in the most destructive phases of really disastrous earthquakes.

If the common assertion that vibrations of over $0.1g$ are damaging to buildings is justified, then it is clear from these figures that the seismic theory of the cause of poltergeist effects cannot possibly be maintained. Is the assertion justified? The whole matter is examined very thoroughly in the B.R.S. Digest No. 78 (cf. also Richter, pp. 87-9), which considers both data gained from experience in earthquake regions, and the results of experimental in-

vestigations. An acceleration of $0.1g$ with a frequency of 3 c.p.s. and an amplitude of 0.1 in. will cause severe damage to the walls of a house; the same acceleration with a frequency of 100 c.p.s. and an amplitude of 0.0001 in. may not cause any damage at all. An acceleration of $1g$ with a frequency of 10 c.p.s. and an amplitude of 0.1 in. is likely to destroy a house; the same acceleration at a frequency of 100 c.p.s. and an amplitude of 0.001 in. will still cause severe damage. Table IV makes it quite clear that vibrations which could produce poltergeist movements of the type under discussion would also shatter a house completely.

Earthquake vibrations, as we remarked before, are predominantly horizontal; and it is their horizontal elements that are chiefly responsible for earthquake damage. None the less they quite frequently also contain vertical components; and the artificially produced vibrations listed in Table II are predominantly vertical. Vertical vibrations would be necessary to produce the phenomena described in examples 5 and 6 above. Is there any evidence that a house can withstand vertical vibrations of the accelerations necessary to project an object into the air?

Most buildings are designed to withstand a considerable vertical load, but not much lateral stress. None the less it does not seem likely that even a strongly built house would survive the vibrations necessary to throw an object into the air. To project an object upwards, a vertical vibration must necessarily have an acceleration in excess of g , and vertical accelerations in excess of g occur in only the most violent earthquakes (Richter, pp. 50-1, 87).

The B.R.S. Digest No. 78 also goes into the question of human sensitivity to vibrations; after reviewing some experiments conducted in Germany in 1931 (which suggest that the figure of $0.001g$ for the lower limit of human sensitivity to vibration was approximately correct) it concludes 'in the majority of cases it may be assumed that the vibration must become "unpleasant" or "painful" to a person in a building long before there is any possibility of structural damage'. We have just shown that structural damage would occur long before there was any possibility of poltergeist effects.

Subsidence and Tilting of Houses in Relation to Poltergeists

Exponents of the Geophysical theory have often suggested that the movements of objects reported in poltergeist cases take place because a house has been made to tilt through the pressure of water accumulating underneath it. Mr Lambert says: 'At various points along the coast subterranean rivers discharge water into the sea at or below sea level. Their estuaries are normally kept open

by scour, just like those of surface rivers, and the tide can penetrate some distance up them. The channel, however, is like a pipe, and if the lower end is for the time being "blocked" either by a high tide, or, worse still, by sand or shingle washed into the mouth by tidal scour or very rough weather at sea, a spate of fresh water coming down from the land can exert very great hydraulic pressure on the walls of the channel. The pressure can only ease itself upwards, by forcing up the layers overhead. In such conditions Nature provides a sort of powerful hydraulic jack, able to hoist up not a motor car, but a house.' (Lambert 1955, p. 51.)

It must not be supposed that Mr Lambert is maintaining simply that when the floors of a house tilt sufficiently furniture will begin to slide across them. Skempton and MacDonald (1956) have demonstrated that if for any reason a frame house tilts more than 1 in. in 25 ft. out of the true, large cracks will appear in its panel walls and masonry facings; a house which moves more than 1 in. in 12.5 ft. out of the true (i.e. 1 in 150) will begin to collapse. Simple experiments show that a heavy table or chair will not of its own accord slide in a gradient of 1 in 25.

There seem to be three possibilities which Mr Lambert does wish to entertain. These are as follows:

1. That a house is tilted by water pressure, and then suddenly dropped when the obstruction causing the pressure is broken down. Mr Lambert says: 'When a whole house is tilted and dropped . . . the walls of rooms at right angles to the line of tilt are themselves tilted away from the vertical, and return to it suddenly. This last movement is quite sufficient to "throw" small articles from shelf and mantelpiece, especially if they are high up, where the angle of displacement is greater than near the floor. . . . An attempt to reproduce the conditions on a miniature scale can be made by choosing a heavy box with a narrow ledge round the top. Place some small metal object on the ledge, and tilt the box back till the front is raised about 1½ in. Then let the front suddenly drop, and the small object will be thrown to a distance about equal to the height of the box. As in poltergeist cases the tilt of the wall appears to be more than that when movements take place, a backed shelf 5 or 6 ft. above the floor should be able to throw small objects to a distance more than half way across the room.' (Lambert 1956, pp. 203-4.)

If a small object, e.g. a vase, is standing on a mantelpiece (or on anything else for that matter), and the mantelpiece suddenly drops, the vase will not part company with it; both will fall at the same rate. If the fall of the mantelpiece were suddenly arrested the vase might bounce (if it did not break), but it would certainly

not bounce to a height greater than the height from which its downward movement began.

It is true that the vase might receive some horizontal impetus if the mantelpiece did not drop quite vertically, and of course the ledge in Mr Lambert's example of the tilted box would not drop vertically. But it must be remembered that in order to throw an object to a distance 'about equal to the height of the box', the box had to be tilted perhaps 1 in 5 or 1 in 10; a house cannot be tilted more than 1 in 150, and if the tilted end of a house tilted at 1 in 150 were suddenly dropped, there would hardly be sufficient horizontal thrust to make an unbiased object bounce appreciably away from the vertical, and certainly not enough to project it across the room.

2. An 'hydraulic jack' might produce sudden upward thrusts or blows underneath a house. Mr Lambert says: 'The contention here is that a jolt imparted to a house from underground, either by water in a confined channel or by rock, can be transmitted through the structure of the building to loose objects in the rooms, sending them "flying", and that this can happen without any damage to the house, if it is on a firm foundation.' (Lambert 1959, p. 112.)

A sudden blow might just possibly produce object movements without actually destroying the house affected, but none the less there are serious objections to the idea, the most important of which are as follows:

An isolated blow would only result in a single instance of movement. A poltergeist is by definition a phenomenon of a recurrent and prolonged nature. (Cf. Lambert 1956, p. 203—'In the Stratford (Connecticut) case, for instance, "a chair was perceived to rise from the floor and beat down again, five or six times, with a violence which caused the house to tremble".') To produce effects for a period of fifteen minutes or more there would have to occur a series of isolated blows, which would not go unnoticed by any percipient of the phenomena they produced, and which would eventually have the same effect upon the house as sustained vibration. The chances against the natural occurrence of a freak isolated blow causing the movement of objects in a house are so great that any repetition of it sufficient times in fifteen minutes, or even 24 hours, would in itself constitute a paranormal phenomenon.

Furthermore in some poltergeist cases a single object in a room has been thrown while all the others remain still; this effect could be produced neither by a sudden blow nor by sustained vibrations. To argue otherwise is to endow geophysical forces with a selective intelligence, a suggestion which hardly warrants further discussion.

The only known force which will produce eerie phenomena in a water channel, for instance noises 'like someone with an enormous hammer and chisel trying to break through the wall', is the so-called 'water-hammer'. This well-known effect requires a number of specific conditions before it can happen.

'Water-hammer' is the result of the sudden cut-off of a full flowing bore, such as when a bathroom tap is turned off suddenly; the resultant bangs and thumps are caused by a pressure wave which travels back and forth along the entire length of the pipe at approx. 4,400 ft/sec. The diameter of the pipe or channel is irrelevant, but an almost instantaneous cut-off of the flow of water is necessary to cause a full build-up of pressure, e.g. 1/10th sec. in a system 200 ft. long and 2 secs. in a pipe 1 mile in length.

In the case of old sewers the rough internal finish of the brick-work is not conducive to the free passage of a pressure wave, and so old sewers, unlike a steel or iron pipe, will not facilitate water-hammer effects. The irregular walls of underground channels through limestone would probably prevent the passage of the pressure wave completely.

It will be seen from the above that no water-hammer can be produced in a water channel without the artificial introduction of an instantaneous cut-off. The gradual build-up of a tide, its closing of any tidal flap and the turn of water at its maximum height are not sufficiently instantaneous. If by some inconceivable freak conditions a water-hammer did occur, the knocks would be experienced along the entire length of the channel and not at any one specific point, as for instance at one house in a row of houses.

Even if we ignore all the expert advice and assume that a water-hammer could occur in a sewer, it could not happen more than once. At 5 ft/sec pressures of the order of 360 lbs. per square inch would be created and destroy its walls—especially if it were one of the seventeenth- or eighteenth-century sewers so commonly invoked. For violent phenomena to be produced in a house by a water-hammer, its foundations would have to be in direct contact with the sewer wall; and most sewers lie at a depth of 10–12 ft.

3. The 'slow advancing' of furniture across a room might be due to a series of slight tilts and slight drops, or to something like a series of little taps under the floor, or 'jogglings' of it. (Lambert 1956, pp. 202, 205.)

Possibly, but we are not discussing such 'borderline' candidates for the title of poltergeist phenomena. In any case, it seems likely that the sustained vibrations necessary to produce 'the slow advancing' of furniture would be liable to damage the house.

Water Movements in Sewers

Old sewers figure so prominently in the geophysical theory that perhaps they deserve a section to themselves. It has sometimes been hinted, for instance, that tidal water running back along an old sewer may wash away the foundations of a house, and cause subsidence; or that a head of water could build up in one after heavy rain, and act as an 'hydraulic jack' underneath a house; or that a head of water and a flood tide might act in combination to produce pressure phenomena. In most cases, the exact course, sources and outlet of the putative sewer have not been determined with accuracy. It would be wise in the first place to establish beyond doubt that a sewer really does exist. For instance, in the Ousedale case (see Dingwall and Hall, ch. IV) it would have been a comparatively simple matter to water a few ounces of fluorescin marker dye (as used in air-sea rescue operations etc.) into the ground around the house; its brilliant yellow-green colour could easily have been detected somewhere along the river bank, and would have proved conclusively that a sewer did in fact exist.

We have already tried to show that the subsidence or tilting of a house, whether caused by the flowing or accumulation of underground water, or in some other way, cannot be responsible for major poltergeist effects. Furthermore, we have consulted a number of hydraulics and sewer experts, and from the facts and figures obtained from them, and some practical demonstrations, it seems certain that the flowing of tidal water in a sewer cannot in any way produce violent poltergeist phenomena in any house situated near it. Some very low level auditory effects might be produced by the escape of compressed air, but air or water pressure in a sewer could not make a house tilt or lift, nor could it cause loud noises. Pressure of water in a sewer sufficient to lift a house would quite certainly destroy the walls of the sewer.

When flood water is forced down a sewer by a head of water inland, its flow into a tidal river or estuary will not be sufficiently impeded by a high tide to cause back pressure. Most sewer outlets are fitted with a tidal flap to stop salt water seepage; this will only close when there is no water passing from the sewer into the river. When flood water empties out of a sewer mouth into any level of tide, the flap will remain open. In some instances when a fast current is passing the outlet increased evacuation of the sewer will be produced by syphoning, particularly during the flood and ebb of the tide.

The period of greatest tide height, i.e. slack water, will not in

any way retard the emptying of the sewer. The difference in the specific gravity of sea and fresh water is irrelevant.

2. INADEQUATE EVIDENCE

(i) *Miscellaneous Factual Errors.* Mr Lambert states: 'Air, highly compressed by underground water in pockets till forced out through the soil, could cause stones to be ejected with some violence. This "mechanism" would explain other out-of-door cases of the kind, including the fact that sometimes the stones are warm to the touch, i.e. on account of the compression.'

Compression of a stone (except in the human hand) would not heat it; a stone thrown 50 ft. into the air and allowed to drop to the earth would not be heated more than $1/100^{\circ}$ C by its adventures.

Dr E. J. Dingwall and Mr T. H. Hall have suggested that some of the strange noises heard in Ballechin House, Perthshire, during the 1890's might be due to small earth tremors, for Ballechin is close to Comrie, the celebrated 'earthquake village', where many hundreds of shocks were recorded between 1789 and 1890. In support of this theory they cite (*Four Modern Ghosts*, p. 17) a letter from John Milne, the famous seismologist, which is quoted in *The Alleged Haunting of B— House* (New Ed., p. 214). Milne says that there were 465 earthquake shocks in the Comrie district between 1852 and 1890. In fact, however, there were not many more than a dozen. There were over 400 shocks at Comrie between 1789 and 1852 (Davison 1924.) Earthquake activity in Comrie diminished greatly after 1849. During the ten years 1890 to 1900, when the Ballechin haunt was flourishing, only three earthquakes are known to have occurred at Comrie; they were all feeble, and none of them coincided with the S.P.R. tenancy of Ballechin.

(ii) *Failure to eliminate alternative hypotheses.* One of Mr Lambert's most important lines of argument is concerned with the geographical distribution of hauntings and poltergeists. He maintains that the following facts support the geophysical theory:

- (a) Poltergeists tend to occur in coastal or estuarine regions likely to be influenced by tides.
- (b) In Scotland cases of hauntings and poltergeists tend to occur in regions subject to earthquake tremors.
- (c) London haunts and poltergeists tend to cluster around underground streams and lost rivers.

We shall consider each of these facts in turn and attempt to

show that they can all reasonably be explained on hypotheses other than the geophysical one.

(a) Mr Lambert has compiled a list of poltergeist cases, and he finds that of 54 cases on his list, 24 happened within three miles of tidal water (Lambert 1955, p. 66). For the sake of simplicity we shall consider only the 29 cases from his list which took place in Great Britain and Ireland. Of these cases 14 occurred within three miles of tidal water.

In assessing these figures it must be remembered that many British rivers are tidal a long way from their mouths; the Thames is tidal for sixty-nine miles, and the Derwent for 50; the Severn bore has been known to reverse the flow of the river at Tewksbury, and the Yorkshire Ouse is tidal as far as Naborn. Mr Lambert is able to count among his tidal cases Willington, which is nearly twenty miles from the sea, and Epworth, which is nearly forty miles from the sea. It is naturally very hard to estimate what percentage of the British population lives within three miles of tidal water; but a few crude calculations suggest that the percentage must undoubtedly be high. Let us consider the distribution of those towns and cities in the British Isles which have a population of over 100,000. *Whitaker's Almanack* for 1961 lists 55 such towns (setting aside for the moment boroughs lying within Greater London); 29 of them are within three miles of tidal water, and 26 are not. The total population of the 29 towns situated within three miles of tidal water is just over 7,500,000; the total population of the 26 towns which are more than three miles from tidal water is a little under 6,400,000. But perhaps the outlying districts of some of the larger towns (like Glasgow or Liverpool) may be more than three miles from tidal water, so to allow for this, let us take 1,000,000 from the tidal total and add it to the non-tidal total, making the following totals:

	Popn.
Towns within three miles of tidal water	6,500,000
Towns more than three miles from tidal water	7,400,000

There remains Greater London. The population of Greater London was estimated in 1951 to be nearly 8,500,000. Of this 3,500,000 is in the administrative County of London, which includes the central region of the city, and 5,000,000 in what is called the 'Outer Ring'. It is hard to guess what percentage of the London population lives within three miles of tidal water, but all in all we do not think it would be wildly wrong to assume that the inhabitants of the Administrative County of London all live within three miles of tidal water, and that none of the inhabitants

of the Outer Ring do so. Of course fair parts of the Administrative County of London are more than three miles from the river; but on the other hand some quite populous boroughs in the Outer Ring (for instance Barking, Dagenham and West Ham) are all close to the Thames. Adding the London totals to the other totals we arrive at the following figures:

	Popn.
Towns within three miles of tidal water	10,000,000
Towns more than three miles from tidal water	12,400,000

These calculations may well be inaccurate; but they do suggest that Mr Lambert is wrong in thinking the relation between poltergeists and tidal areas significant. The plain fact is that towns tend to grow up along rivers and coastlines.

(b) Mr Lambert believes that some alleged hauntings and poltergeists may be the results of earth tremors; to establish this contention he plots 50 Scottish cases on a map (Lambert 1959, p. 111) and shows that they fall into three main groups:

- A. A group in Aberdeenshire and Banffshire.
- B. A group at the eastern end of the central rift valley, including the regions around Edinburgh and Dundee.
- C. A group following the line of the Great Glen.

Groups A and C are in what Mr Lambert supposes is the 'seismic area'; Group B is in a limestone district where one would expect underground streams to be common. As a matter of fact the Northern edge of the central rift valley is very prone to earthquakes, so he could also claim that many of the cases in Group B are in a seismic area.

Mr Lambert believes that the pattern into which these cases fall cannot be dismissed as an effect of the distribution of population. There are six cases in Edinburgh and none in Glasgow; and there are quite a few cases in Aberdeenshire and Banffshire, and also in the South-West end of the Great Glen, yet both these regions are sparsely populated.

We think that Mr Lambert is mistaken. It is true that Aberdeenshire and Banffshire are thinly peopled; but compared with the rest of the Highlands they are quite populous, as can be seen from a brief glance at the population map in the *Concise Oxford Atlas*. It is true also that Glasgow has twice as many inhabitants as Edinburgh; but in the nineteenth and early twentieth centuries more S.P.R. members lived in Edinburgh than in Glasgow. For instance in 1903 there were five S.P.R. members in Edinburgh, and only one in Glasgow. One can reasonably account for the

fact that more cases have been reported from Edinburgh than from Glasgow on the assumption that for a long time cases which occurred in Edinburgh were more likely to find their way into the S.P.R.'s files than cases which occurred in Glasgow. In any case, several poltergeist cases *have* been reported from the Glasgow district. We have no idea how to account for the clustering of cases at the South-West end of the Great Glen, but cannot regard a few eccentric cases as significant.

Davison gives a catalogue of all British earthquakes reliably reported up to 1924. Of the 18 dated cases in Mr Lambert's Scottish list which happened before 1924, 17 can definitely be shown to have no connection with any reported earthquake; the 18th case (No. 4 on Mr Lambert's list) is that of *Ferla Mhor*, the long grey man of Ben Macdhui, who stalked an unfortunate professor through the mists of Ben Macdhui in 1890. There was an earthquake with an epicentre some twenty miles from Ben Macdhui in 1890; but we cannot find the exact day of Ferla Mhor's manifestation.

Davison lists only two earthquakes with epicentres in Aberdeenshire and Banffshire; the second of these occurred in 1821, so there is no justification whatever for Mr Lambert's claim that Group A cases are in 'the seismic area'.

(c) Mr Lambert claims that many London hauntings and poltergeists occur along the lines of London's lost rivers and underground streams. He has compiled a list of 100 London cases, and divided them out according to postal districts (Lambert 1960, pp. 398-404). Of 10 cases in W.1 he finds that 6 lie within about a quarter of a mile of the Aybrook and Tyburn river systems; and of 8 cases in W.2, 5 are close to hidden streams.

There are many miles of underground streams in London, not all of them mapped; indeed a glance at the Geological Survey maps of London to which Mr Lambert refers suggests that in parts of London it must be difficult to find a house that is *more* than a quarter of a mile from an underground river. Before we accepted his views we should want to be shown that his hundred London cases cluster around hidden streams more than would a hundred houses from the same postal districts picked out of the telephone directory.

Mr Lambert makes a good deal of certain correlations between rainy seasons and poltergeist outbreaks; but we do not think they are at all significant. These correlations can easily be reconciled with all the other important theories of poltergeist phenomena; a spiritualist could say: 'It is well known that the physical

phenomena of mediumship require dim lights for their development, and the rainy season is also the most overcast; a proponent of the 'naughty little girl' hypothesis could say 'In rainy weather children can't go out to play, and Satan finds work for idle hands to do'; Dr Fodor might say 'Being a "poltergeist child" is the result of mental disturbance; some kinds of mental disturbances show seasonal variations in incidence.'

On the other hand, it is not altogether clear that these correlations wholly support the geophysical theory. Some 70% of the country South and South-East of a line drawn from Exeter through Bristol and Rugby to Hull is made up of 'firm, shrinkable clays'. This is also the region of England which has the least rainfall. The subject is covered extensively in the B.R.S. Digest No. 3. It is well known that houses built on shrinkable clays are subject to subsidence in dry spells, when the clay lying at depths of between two to six feet tends to shrink. Usually the ground is driest about September, and wettest about April.

The volume changes which occur in the clay cause both vertical and horizontal movements of the ground. If the foundations of the ground are located within the zone where seasonal movements of the soil occur, then distortion of the structure will result. Such dehydration effects may well be greatly enhanced by the presence of large trees in the neighbourhood. Large trees can transpire some 12,000, gallons of water each year from the ground. The root systems of large trees spread to a radius greater than their height, and significant drying of the soil to a depth of 10 ft has been observed in the area of the root spread. Dehydration of the soil by root systems has been known to cause differential movements of 4 in. in houses up to 80 ft away from the body of the tree, and movements of 1 in.-2 in. are quite common.

The Building Research Station states that in the period 1942-5 inclusive, and in the summer of 1947, the total rainfall in South-East England was much below normal. In these years the damage to houses due to volume changes in the shrinkable clays became very extensive and serious.

Why should poltergeists come out to play chiefly in the rainy season? Throughout the greater part of the country it is *drought* which most frequently causes the subsidence of houses; and exponents of the Geophysical theory have sometimes suggested (Dingwall and Hall, ch. V, Lambert 1958) that the phenomena of hauntings and poltergeists may be related to subsidence.

(iii) *Excessive Reliance on Individual Cases.* Mr Lambert tries to boost his theory by pointing to coincidences between high tides or heavy rains, or the presence of underground streams, and polter-

geist phenomena at Calvados Castle, and at Runcorn. (Lambert 1955, pp. 52 ff., 62 f.). But the total number of recorded poltergeist cases is considerable, and very high tides are not uncommon —Whitaker's for 1961 gives seven high tide warnings for the Thames. Underground streams are also far from rare. So one should be very careful in drawing conclusions from occasional coincidences, even quite extensive ones, between tides and poltergeist phenomena; and similarly with coincidences between poltergeists and underground streams.

(iv) *Circularity.* In one of his papers, Mr Lambert suggests (Lambert 1958) that certain cases of apparitions may be explained in the following way. Geophysical forces cause mysterious noises to be heard in a house; the mysterious noises make people imagine that the house is haunted; people who imagine that a house is haunted are liable to see ghosts in it. Therefore the geophysical theory can explain not only poltergeist cases, but some apparitional phenomena too. Since propounding this theory about ghosts Mr Lambert has unhesitatingly included cases of hauntings and apparitions among the cases which he uses to support the geophysical theory; for instance his list of Scottish hauntings includes a phantom coach and four and the apparition of an airman; while among his London cases are the ghost of a man who died of DTs, and a ghost seen in the barber's saloon of a well-known London store. But this whole proceeding is very shaky, for Mr Lambert's explanation of ghosts and apparitions depends upon assuming that geophysical forces can produce eerie noises whose true cause is not recognized; yet he uses the distribution of ghost cases to help prove that geophysical forces *can* produce these eerie noises.

CONCLUSION

It will be obvious that we do not think the geophysical theory can be upheld with regard to major poltergeist effects; none the less it may be that during abnormally wet weather or abnormally dry weather houses are subjected to strains which produce curious noises, and that imaginative people might misinterpret these as the pranks of tricksy spirits. Future investigators of poltergeist cases will have to bear this possibility in mind; and Mr Lambert deserves their gratitude for having brought it to light.

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THE GEOPHYSICAL THEORY OF POLTERGEISTS

BY A. D. CORNELL AND ALAN GAULD

(Comments by G. W. Lambert)

THE geophysical theory is an attempt to explain a number of otherwise unaccountable events in the physical world. It is a rule of the Society that as possible causes of such events all normal physical agencies must be very carefully canvassed before a paranormal agency is invoked.

The authors contest the claim that most poltergeist phenomena are caused by tides, earth tremors or underground streams. Unfortunately they do not offer any other hypotheses to explain them, and we are left wondering at the end of the paper how they are caused.

It is quite easy to show that the events are not the simple effects of tides or recognized earthquakes, or underground streams. Nor are they caused simply by frequent conjunctions of these, such as a high tide coinciding with a heavy shower of rain. If they were, the occurrences would be much more frequent than they are. They are clearly due to *unusual* conjunctions of events, *and all the contributing factors*, including favourable underground conditions, must be there when the happenings occur. When we cannot see any visible means by which motion is imparted to objects moved, and have ruled out any interference from above or any side, we are apt to jump to the conclusion that there is some paranormal agency at work, forgetting that the motion may be imparted from the one direction in which we cannot see, viz. under foot. This weakness of human observation has been used by illusionists to perform some striking 'miracles', such as passing a girl 'through' a brick wall, whereas she really passed under it. We are bound to see to it that Nature does not trick us in the same way.

MECHANICS OF POLTERGEIST MOVEMENTS

The examples quoted are interesting, and it is valuable to know what kinds of amplitudes and frequencies are produced by various kinds of artificial microseisms. But none of them provides an answer, and I doubt whether anyone is yet in a position to frame an experimental set-up that would at all accurately imitate the mechanics of poltergeist 'attack', which seems in most cases to

strike upwards, from below, disturbing the parts of the building in a vertical, and not horizontal direction. The nearest natural 'imitations' of poltergeist movements and noises are certain earthquake effects, which can occur without any, or with very slight damage to the house. Compare the following. The effects in the right hand column are nearly all taken from the abbreviated Mercalli Scale, Intensities I to VI only, as shown in the *Encl. Brit.* s.v. Earthquakes.

P. and H. Effects

Vague feeling of uneasiness or fear
 Lamp swinging and suspended bell ringing
 'Footsteps', noises as of a carriage or lorry
 Turning on and off of electric lights
 Knocks
 Breaking of windows
 Movements of small free objects
 Stopping of pendulum clocks
 Shaking of beds and disturbance of bedclothes
 Movements of heavy furniture

Earthquake Effects

I. Some birds and animals show uneasiness
 II. Delicately suspended objects may swing
 III. Vibration like the passing of a truck (lorry)
 IV. Dishes, windows, doors disturbed
 Walls make cracking sounds
 V. Dishes windows and so forth broken
 Unstable objects overturned
 Pendulum clocks may stop
 VI. Some heavy furniture moved.
 Some falling of plaster and damage to chimneys.

In the Mercalli scale slight to moderate damage to ordinary well-built structures does not come in till Intensity VII, and partial collapse of such buildings comes in Intensity VIII. It is easy to point out that the effects in the right hand column are widespread, whereas those in the left-hand column are not, but some attempt has been made to answer that remark in the paragraph on earth tremors quoted below. The comparison anyhow shows that a good many 'poltergeist' effects could be physically produced without the whole building falling down. In that connection it is interesting to read the following description of an earthquake in Crete, apparently in 1926, written by Sir Arthur Evans, and quoted (p. 193) by L. Cottrell in *The Bull of Minos* (Evans Bros. London):

'On June 26 at 9.45 on the evening of a calm warm day the shocks began . . . my confidence in the strength of the building proved justified, since it did not suffer more than slight cracks. But it creaked and groaned and rocked from side to side as if the whole must collapse. Small objects were thrown about, and a pail of water was nearly splashed empty. The movement which

recalled a ship in a storm, tho' of only a minute and a quarter's duration, already produced the same effect on me as a rough sea. A dull sound rose from the ground . . . our single bell rang.'

Compare that with O. Giddling's description of his impressions during the poltergeist outbreak at Portland, Oregon, U.S.A., in 1909, quoted by me in *Jnl S.P.R.* June 1955, p. 60.

As I understand it, earthquake tremors at a considerable distance from the epicentre have a relatively large horizontal component, which makes them destructive. If we are here dealing with earthquake *type* effects, initiated from a focus very near the surface, one would expect to find them relatively violent overhead, but very soon damped out all round. Cf. what R. Hewitt says (pp. 41-2) in *Earthquake, Fire and Flood* (G. Allen and Unwin), 1957, regarding shallow-focus earthquakes in the Mediterranean:

'Because of the small depth of the focus it is usually very violent and destructive in the epicentral area on the ground immediately above, but the total disturbed area is comparatively small.'

Following this line of thought, one is tempted to speculate whether any kinds of spontaneous explosions of gas have ever occurred in old sewers, where flood water has set up unusually high compression in parts from which the gas cannot escape.

POPULATION FIGURES

Taking next arguments based on geographical distribution there is undoubtedly a considerable degree of correlation between poltergeist phenomena and population. To take an extreme case, in an area of nil population, there would be no one, except a casual traveller, to report a single case. As I said in my paper on Scottish cases (*Jnl* Sept. 1959, p. 110) 'Density of population is, of course, a factor in the situation . . . but it does not appear to be the governing factor.' Where density of population is relatively high, houses are numerous and there is a high risk of their being built on sites vulnerable from below. Such density is high round the coasts of the British Isles as a whole, and in this connection I must correct an error I made in my original paper on Poltergeists in the *Journal* for June, 1955, pp. 50 and 66, where the number of cases for the inland area of Great Britain should be 11, not 8. (I am indebted to Mr Gauld for pointing that out.)

Even so, the coastal strip seems to produce an undue number of cases, and I have tried to find some more accurate way of testing the point. The figures so far used have been dangerously small from which to argue, so I have made out two lists for England and Wales, attached as an Appendix. Working by counties, one can

make a direct comparison with population and acreage figures in *Whitaker's Almanack*, and get frequencies per 1,000 population and per 1,000 acres. The division between Coastal and Inland counties is not a very exact way of separating out the effect, if any, of the sea, but as most of the coastal counties include large inland areas, the tendency would be to reduce, rather than to exaggerate the difference between them. All London (L.C.C. area) has been reckoned as 'coastal', being bisected by the tidal Thames, and to compensate for any over-weighting of the table, I have reckoned all Middlesex and Surrey, including Thameside areas, as inland.

The approximate figures are as follows:

ENGLAND AND WALES

	H. and P.	Population (000)	Acres (000)
<i>Coastal Counties</i>	427 cases	26,500	23,700
<i>Inland Counties</i>	187 cases	17,600	13,360
Frequencies of H. and P. cases per thousand:	<i>Coastal</i> <i>Inland</i>	1 in 62 1 in 94	1 in 55 1 in 71

If the events under review are of psychological origin, it is difficult to understand why persons living in the coastal counties should be so much more liable to cause them than people living inland. Is it because there are more adolescents in the seaside towns? I can find no figures to test this point. It is worth noting that the inland counties, where density is low, include both Oxford and Cambridge, whence one might expect to get a good number of local cases, but their figures are disappointing. A sorting of the figures by towns might throw some light on the position, but it is not enough simply to compare population figures, as is done on pp. 142-3. The comparison is between *frequencies*, and to arrive at that it would be necessary to get the number of cases for each town included in the comparison. Here is an example of the kind of figures which seem to require some explanation other than mere population density. Dorset (see Appendix) with an area of 623,000 acres, and a population of 300,000 provides 13 cases. Warwickshire, with an area of much the same size (629,000 acres) but a population (1,880,000) six times that of Dorset, provides only 10 cases. The Dorset collection covers a period of over a century, and shows no sign of 'bunching' owing to some enthusiastic local collector.

Under the somewhat sweeping headings 'Inadequate Evidence' and 'Miscellaneous Factual Errors', the authors attribute to me one alleged error, viz. the supposition that stones ejected from the

earth might be hot owing to compression. The supposition, of course, is that the stones are heated, not by the compression of the stones themselves, but by convection from the air heated by compression in the 'pocket'. Everyone who has used a bicycle pump knows that the barrel of the pump, as well as the air inside, gets hot from vigorous pumping.

Earth Tremors are not really a separate and distinct possible cause of poltergeist phenomena. From the geophysical standpoint, any physically caused noise or movement is caused by a shock or vibration, whether the initiating force underground is water, or gravity (in the event of a collapse or fault movement), or in some places abroad, volcanic pressure. Obviously the events to be accounted for are not caused by earthquakes of the magnitude recorded by seismographs, and there is nothing in the point (pp. 144) that my list of cases for Scotland cannot be correlated with Davison's list in his *History of British Earthquakes*. Earthquakes of a size to be recorded as such usually have a focus some miles down in the Earth, and shake an area of many miles radius from the epicentre. But here we are concerned with disturbances starting a few feet or yards below ground, and, in many cases, affecting only part of a house.

The view that earth tremors may be caused by water is not a guess of my own. G. A. Eiby in *Earthquakes* (F. Muller, London, p. 108) says 'In the Himalayas the frequency of small earth tremors is found to be related to flood conditions in the rivers, a high rate of change of flood intensity being particularly likely to trigger off minor swarms.' I do not know whether a similar correlation has been noted in the Scottish seismic area, which, as I understand it, extends round the foothills of the Grampians in all directions.

I have looked up Prof. Milne's letter in the *Times* of the 2 June 1897, about the Ballechin House case, and in it he wrote '... For years past this part of Perthshire has been well known as the hot-bed for British earthquakes. Between 1852 and 1890 (sic) no less than 465 shocks have been noted there, out of which number 430 are claimed by Comrie. Many of these have been accompanied by sounds, and often, as is common in earthquake countries, and as I can testify from considerable personal experience, sounds may be heard and no movement can be either felt or recorded by an ordinary seismograph. . . . Such sounds do not travel far from their origin.' It looks as if Prof. Milne had used a different measure of what constitutes a shock from that used in the *History of British Earthquakes*.

The short point is (a) that water can set up earth tremors, and (b) that such tremors can cause mysterious noises, anyhow in

mountainous country. As movements of objects are so often associated with mysterious noises, as in the Ballechin House case, there is a strong presumption that one ought to look for the cause in the same quarter.

UNDERGROUND RIVERS

It is of course a travesty of my views to suggest that I regard any house within $\frac{1}{4}$ mile of an underground stream as vulnerable to it. The houses marked on the maps of W.1 and W.2 in my article are all within a few yards of the *approximate* courses of streams or their known affluents. I have not assumed an affluent unless there is a strong reason to suppose that it exists, e.g. a street name like 'Brook' overhead. It is a mistake to suppose that there are so many unmapped underground streams that almost any house could be correlated with one.

As to my including in my lists cases of 'phantom horsemen', 'ghostly deer' and the like, I purposely took all recorded cases with a definite place or date so as to avoid the charge that I was packing my lists with 'likely' cases. As irrelevant cases tend to water down the effect of the rest, they work against, rather than for a particular conclusion. As a matter of fact, I am in touch with a folklore collector, with a view to comparing notes about the distribution of certain kinds of legends in this country.

The idea that expectancy, due, perhaps, to mysterious noises, can induce hallucinations of sight is not 'my' theory. It is a very old one, and is mentioned by Gurney in *Phantasms of the Living* (Vol. I, pp. 512-18).

In short, the geophysical theory proves nothing in relation to a case where it is clearly contra-indicated, e.g. if there is a ghost only, or the phenomena 'show intelligence', or, as in a case I have recently investigated, the evidence pointed clearly to internally caused noises in the head.

APPENDIX
ENGLAND AND WALES

COASTAL COUNTIES	No. of H. & P. Cases	Acreage in 000	Population in 000 (1953)
London	125	75	3,343
Kent	34	976	1,588
Sussex	34	932	943
Hants and Isle of Wight	15	1,056	1,332
Dorset	13	623	300
Devon	15	1,671	806
Cornwall	2	868	343
Somerset	20	1,032	562
Gloucestershire	19	805	951
Monmouth	7	347	424
Glamorgan	8	523	1,203
Carmarthen	2	588	171
Pembroke	1	393	92
Cardigan	—	443	53
Merioneth	1	422	41
Caernarvon	2	364	123
Anglesey	—	177	51
Denbigh	3	428	170
Flint	—	164	145
Cheshire	13	649	1,265
Lancs	23	1,202	5,093
Cumberland	6	973	284
Northumberland	4	1,292	797
Durham	7	649	1,465
Yorks, North R.	6	1,361	526
" East R.	4	750	513
Lincs	8	1,700	710
Norfolk	18	1,314	547
Suffolk	17	948	451
Essex	20	978	2,085
	427	23,700	(circa) 26,500

INLAND COUNTIES	No. of H. & P. Cases	Acreage in 000	Population in 000 (1953)
Bedfordshire	4	303	320
Berkshire	9	464	427
Bucks	8	479	398
Cambs	12	315	177
Derby	3	644	831
Hereford	6	539	128
Herts	10	405	651
	154		

INLAND COUNTIES	No. of H. & P. Cases	Acreage in 000	Population in 000 (1953)
Hunts	3	234	71
Leicester	12	532	638
Middlesex	8	149	2,260
Northants	8	585	367
Notts	6	540	853
Oxford	13	479	296
Rutland	2	97	23
Salop	7	862	299
Staffs	5	739	1,630
Surrey	18	462	1,625
Warwick	10	629	1,880
Westmorland	4	505	67
Wilts	11	861	391
Worcestershire	7	478	532
Yorks, W.R.	21	1,779	3,574
Brecknock	—	469	56
Montgomery	—	510	45
Radnor	—	301	20
Totals	187	13,360	(circa) 17,600

REVIEWS

HUMAN PERSONALITY AND ITS SURVIVAL OF BODILY DEATH. By F. W. H. Myers. Edited by Susy Smith. Foreword by Aldous Huxley. University Books, Inc., New York, 1961. \$10.00.

University Books are to be congratulated on producing this timely new edition of *Human Personality*, particularly as neither of the former abridged versions of this classic is still in print and as to the newcomer to psychical research the work is usually more acceptable in this form than in the more cumbrous two volume edition. The format of this edition is clear and pleasing to the eye. The incorporation of the appendices in the texts certainly makes for greater readability, but it is perhaps to be regretted that the paragraph-numbers have been omitted since this makes cross-reference to other editions unnecessarily difficult.

By her retention of a considerable number of the case-reports, the editor has been forced to curtail the detailed discussions of their evidentiality and the various alternative hypotheses put forward in explanation of their implications. For example, in the chapter on 'Phantasms of the Dead' she leaves out the entire discussion of how far post-mortem apparitions could be explained

by latent telepathic impressions originated by the agent before his death. One wonders whether it might not have been better to select fewer cases—those which most clearly illustrated points brought out in the argument. As it is, those wishing to acquire sufficient understanding of spontaneous cases to become investigators themselves will still find the unabridged edition most helpful in gaining awareness of the points in a case which favour and disfavour different explanations.

In the course of this abridgement the original balance of Myers's ideas seems rather to have suffered. He may have insisted at too great length on the common features of different classes of phenomena, and their underlying unity when viewed in the light of his theories of the subliminal mind. However, it is doubtful whether sufficient emphasis on his theoretical position has been retained in this edition, particularly as the chapter on 'Genius' has been cut down from 50 pages to 10 (rather shorter) pages. Moreover, the 'Epilogue', an invaluable guide to understanding Myers's own attitude to the human mind and its relation to what he calls 'this infinite universe', has been completely omitted. These particular cuts are the more to be regretted since, as Aldous Huxley points out in his foreword, Myers was one of the few psychologists to see in the subconscious mind potentialities for the elevation as well as for the degradation of human nature. Furthermore, to perceive the relation between the phenomena of psychical research and those of hypnosis and multiple personality is hardly difficult; to relate them to the phenomena of creative thought and mysticism is both more daring and more enlightening. It is true that Myers's enthusiasm for the cosmic vista thus opened led him on occasion into a somewhat repetitive lyricism. However, more of the true flavour of his thought, characterized as it was by a rare combination of the sweepingly theoretical with an acute awareness of factual detail, might have been retained by more sympathetic editing.

But undoubtedly many will find this edition a convenient introduction to this irreplaceable classic of psychical research, and it is to be hoped that some will be encouraged by it to find the apparent complexities of the original less daunting.

CELIA GREEN

SEARCH FOR SECURITY: AN ETHNO-PSYCHIATRIC STUDY OF RURAL GHANA. By M. J. Field. London, Faber and Faber, 1961.
478 pp.

This work should be read by all those who wish to become acquainted with a developing society and the stresses of the mental

and emotional lives of the people. Dr Field, already well known for her studies of the Ga peoples, is a trained anthropologist and psychiatrist and her sound commonsense and knowledge of her subject enable her to give a balanced picture of her patients and their surroundings.

The book is divided into two parts. In the first the author deals with the general background, social, economic and psychological, passing from there to a description of the shrines to which people in Ghana resort in times of anxiety and emotional stress. In the second part Dr Field deals in some detail with her patients and relates their symptoms to current practices, especially those connected with various ancient beliefs and superstitions, describing how these are used by the priests at the shrines and how, in some cases, the treatment followed can be linked with Western psychotherapeutic methods.

In dealing with these Ghana shrines and the procedure generally Dr Field touches upon a whole series of phenomena interesting to the parapsychologist, such as spirit possession, glossolalia and hallucination. An admirable chronicler, she deals with all these matters in an orderly way and from the standpoint of a cool and detached observer who is willing to accept the paranormal if it be found. Until that time arrives she prefers to regard these phenomena from the purely psychological angle, and thus her treatment of possession is both restrained and critical.

If more books like this were written we should hear less of the marvels of darkest Africa and realize that there is little to choose between the superstitions of the African and those of the European, however much the beliefs of the latter may be disguised in technological jargon.

Admirably produced by the publishers, the book is a model of its kind. In the whole of her general treatment Dr Field, unlike so many psychologists, shows that she understands the nature of evidence and never goes beyond her facts.

E. J. DINGWALL

LA ENERGETICA HUMANA: SU PATOLOGIA Y TRATAMIENTO. By A. Figueras and José Tomás Zeberio. [Published by the Authors?] La Plata pr., 1961. xiii. 160 pp.

This work will be of special interest to all those who concern themselves with such subjects as the human aura and medical treatment through radiesthesia and similar methods. The authors have worked on the assumption that there exist in the human

body certain zones or fields of 'energy' which can be investigated and compared in the state of health and that of disease.

Two main aspects of the problem are dealt with. There is firstly the question of diagnosis and the systematic study of the field of energy especially in relation to changes in that field under the influence of neurotic and psychotic conditions; and then there is the therapeutic aspect where the various methods used by the authors in their treatment are described.

The book is illustrated by coloured plates; and the findings of the authors are supplemented by quotations from various writers in parapsychology and psychoanalysis. From the accounts given in the text it would appear that it was through the clairvoyant perception of Mr Zeberio that the whole subject was opened up to medical inquiry.

E. J. DINGWALL

THE SUPREME ADVENTURE. By Robert Crookall. James Clarke & Co., Ltd, London, 1961. 255 pp. 18s. 6d.

Dr Crookall's aim is the construction of a coherent picture of the psychological processes of death and survival, which he bases on a close study of reports of spontaneous experiences and mediumistic communications. He presents his material in terms of a fairly elaborate theory which (he argues) gains additional support from phenomena of the 'out-of-the-body' type. In summarizing his main contentions, he declares: "'Death', the supreme adventure as seen by us mortals, is merely the *first* of a series of three unveilings, or births, into 'higher' and therefore more harmonious conditions or environments. After physical death the double consists of the Soul Body *plus* the vehicle of vitality, so that consciousness, if any, is more or less dreamy ('sub-normal') and the environment of the 'Hades' or illusory type. This usually brief phase ends with the '*second death*', the shedding of the vehicle of vitality from the Soul Body: 'Paradise' conditions are then entered and consciousness is of the 'super-normal' type (with telepathy, clairvoyance, foreknowledge, etc.).' At the end of the 'Paradise' state the Soul Body is shed (the third death) and the true 'Heavens' are entered. After this, direct communication with mortals becomes impossible.

It is claimed by the author that parallels which he points out in the material under discussion support this detailed view of the after-death process. As appeals to evidentiality cannot well be

made in connection with descriptions of 'other world' conditions, it is for the individual to decide how convincing he finds the parallels in the descriptions quoted. These are often of interest, quite independently of whether or not they establish Dr Crookall's theory. For example, he has collected from a variety of sources numerous references to 'silver cord' and 'tunnel' symbolism. Many psychical researchers will find the book of value for these suggestive pointers alone.

The author is aware that the heterogeneity of his sources is open to criticism, but argues that the similarities to be found in material derived from widely different times and places are great enough to obviate the accusation of collusion and to rule out their attribution to a mediumistic 'climate of thought'. In his opinion, it is unproductive to dismiss any statements about this subject; he says, 'The wise procedure is provisionally to accept all available evidence [and to attempt to relate it] . . . : any complete fabrication will then stand revealed since it will be in clear disagreement with the whole of the other evidence.' Although there is something to be said for such a viewpoint, ought we so completely to abandon a critical assessment of the circumstances and sources of this sort of material, and, even granted the honesty of the reports, ought we so readily to accept them at face value? This is not to deny that Dr Crookall has scrutinized his subject-matter with some care, but merely to point out that by examining it solely from his own spiritualistic standpoint he fails to convince those who do not accept his views in the first place.

SALLY ADAMS

THE STUDY AND PRACTICE OF ASTRAL PROJECTION. By Robert Crookall, D.Sc., Ph.D. London, The Aquarian Press, 1961. 30s.

The title of this book is somewhat misleading, and no one should buy it who hopes to learn how to practise astral travelling for he will be disappointed. A simpler title such as 'A review of out-of-the-body experiences' would have been more illuminating for that is what the volume is. Dr Crookall gives an account of some 160 such experiences which are divided into two categories 'natural' and 'enforced' these being the same that he had used in his other recently published book '*Supreme Adventure*' in dealing with a much larger body of 'mediumistic' evidence about the actual nature and act of quitting the body or dying. The two books

really need to be read in conjunction for if the methodology of the author is justified then the evidence contained in the book on Astral Projection does much to validate the conclusions reached in the *Supreme Adventure*. It is indeed a remarkable methodological tour de force that Dr Crookall has finally produced as the result of a lifetime of study, and which retirement from his main work as Senior Government Geologist has now given him the time to set forth, and it is, perhaps, as much on its scientific method as on its individual detail that the book stands or falls.

The book is not a record of experiment such as is now the fashionable trend in psychical research nor do statistics play much part in it. It is worth noting that Professor Gardner Murphy writing recently in the *Indian Journal of Parapsychology* has drawn attention to the fact that experimental method is not always the only one that leads to important results. 'Probably the most important advance in the sciences relating to man has arisen from Charles Darwin. Only here and there in minor matters did Darwin resort to experiment. The important thing was to systematize carefully checked experiments.' Dr Crookall's data could perhaps hardly be called experiments but rather, carefully and honestly recorded human experiences; experiences, moreover, of such intensity as have in many cases altered the religious or philosophical outlook of the participant.

Particularly important seem to the reviewer to be the symbols used for describing the actual experiences of getting out of or back into the body, which must surely be, more or less, the same for all and yet are differently described as 'going through a dark tunnel', 'down a long passage', 'down a creek with high banks', 'down inside a long pergola', or the return, 'coming back into a tightly-fitting glove', 'going back down the tunnel', or 'being laid horizontally and pushed slowly back into the physical body again'. Clearly the experiences are the same spatially, yet receive these varying descriptions. A study of these accounts must raise in its most acute form the whole problem of symbolism and the nature of our sensory (hallucinatory?) experience.

The two volumes provide in a most valuable and succinct form material for study for a good while to come and must have their place on the shelves of every student of the paranormal. In particular a classification and standardization of terms is much needed. I myself cannot but feel that the massive array of evidence for exteriorization which Dr Crookall gives, proves the reality of the experience, which, if true, goes a long way towards proving survival of personality and consciousness and some sort of body after death. For if we can leave our bodies and return to them

during lifetime, while still connected to them by the 'silver cord' (which most communicators experience), the evidence for survival when the cord is finally snapped, such as is given in the *Supreme Adventure*, seems validated also.

JOHN D. PEARCE-HIGGINS

IMMORTAL LONGINGS. By Stephen Findlay. Victor Gollancz, Ltd, 1961. 192 pp. 21s.

Mr Findlay brings a refreshing clarity of thought and individuality of approach to a subject whose discussion is too often muddied by personal prejudice. He surveys the evidence for and against survival, analysing the positions of Christians, mystics, believers in reincarnation and philosophers as well as assessing the overall findings of psychical research, and concludes on a note of tempered doubt, which is the more to be respected because of his own apparent desire for personal immortality. Since he at all times keeps as close as possible to the ascertainable facts of a given situation (and he goes to some trouble to ascertain them), he does not venture much into the realm of hypothesis and speculation, but within these limits his accounts are sound and well reasoned. One may recall, for example, Wittgenstein's question, 'Is a riddle solved by the fact that I survive for ever? Is this eternal life not as enigmatic as our present one?', an observation of a profundity to which Mr Findlay, with his acceptance of survival as of vital importance to the individual, would not appear, nor, I suspect, pretend to attain.

It could be objected that in his discussion of psychical research he has placed relatively too little stress on mediumistic material and too much on experimental work. But since his avowed aim is not merely a survey of this subject but an assessment of its relevance to his main problem, it seems fair enough that, once having decided that mediumistic manifestations (including the cross-correspondences) may best be interpreted in terms of telepathy, precognition and so forth, he should focus his interest on these subjects exclusively. A more serious objection to this interpretation of them is that it shows some unawareness of the possibly complex structure of the personality and of the implications of this complexity for any theory about a personal after-life. Indeed, throughout his book, the author more or less explicitly takes our normal state of consciousness as his touchstone without further analysis. Such a premise, though possibly a legitimate starting-point, and though certainly giving his arguments a greater solidity

and cohesion than is often the case in more speculatively inclined books, necessarily places certain limitations on the conclusions that can be drawn from it. For example, he is not very concerned to analyse in detail how mystical or drug states are related to our everyday psychological states, although he offers a sensible description of them in his own terms.

However, within these terms he does show considerable perceptiveness, for he discusses not only the wishful thinking commonly involved in asserting survival but also that involved in denying either it or its importance.

In short, then, this is a realistic and cogent survey of the material relevant to the problem of survival, and is both well argued and clearly expressed. His intellectual honesty is exemplary.

MARGARET EASTMAN

THREE ARTICLES AND CORRESPONDENCE IN THE SUNDAY 'OBSERVER'. By Mr Arthur Koestler. April–May, 1961.

The *Observer* (issues of 23 and 30 April and 7 May, 1961) published three articles by Mr Arthur Koestler, under the general title 'A New Look at the Mind'. In the first article, 'Pavlov in Retreat', he described some interesting experiments recently carried out in the United States of America in the field of psychological research, especially with the use of hallucinogenic drugs. In the second, entitled 'Behold the Lowly Worm', he described experiments with certain kinds of flat-worms, which, though cut in pieces, are able to retain 'memories' in a manner which seems to imply the inheritance of acquired learning. In the third, entitled 'The Pioneer beyond the Pale', he gave his impressions of a visit to Doctors J. B. and Louisa Rhine at Duke University, concluding with his own view that modern discoveries in the fields of biology, psychology and parapsychology have 'cracked the pillars' on which orthodox (mechanistic) theories about the nature of man now rest.

These articles provoked a flood of correspondence and a selection of letters was published in the issues of 14 and 21 May, and 7 June, including a letter from Mr Koestler in the issue of 21 May. These letters threw an interesting light on the present state of controversy about the problem of ESP, though it can hardly be said that they illuminated the problem itself. The contenders for the most part aligned themselves in the two well-established groups, the exponents of the 'leaky buckets' theory and the exponents of the 'faggot' theory (though these convenient collo-

quialisms were not used). Some diversions were caused by opponents attaching wrong labels to one another, or attributing to one another views which had to be disowned, but the main contest was between those who do not believe in ESP and those who do. It should be noted that Mr Koestler, in his third article, no doubt intentionally, only called in aid the results of experimental work and did not mention the evidence of spontaneous phenomena. So the controversy was about the nature of *experiments* done in the field of psychical research. The critics were led by Dr N. S. Sutherland of the Institute of Experimental Psychology, Oxford University, and Mr C. E. M. Hansel, of the Department of Psychology, Manchester University (issue of 14 May). Dr Sutherland opened his attack by producing a very 'leaky bucket' in the shape of the 'Clever Hans' case (which no serious psychical researcher today would claim as a 'water-tight' proof of anything paranormal) and treated it as if it were a fair specimen of the sort of thing Mr Koestler would believe. Mr Hansel, who, as readers of *Proceedings* know (see *Proc. 53*, Part 190, May 1960) has for some time past, been diligently looking for 'holes in buckets', i.e. flaws in experiments, announced (14 May) that at Duke University, which he visited for three weeks, he had only been offered two series of experiments as conclusive, viz. the Pearce-Pratt series (1933-4) and the Pratt-Woodruff series (1938-9), and had found serious flaws in the design and records of both experiments. Unfortunately, he could not furnish details, as these await publication in the *Journal of Parapsychology*, and he prejudged their effect on Drs Rhine and Pratt. Dr E. J. Dingwall (14 May) who likes not only to run with the hare, but also to hunt with the hounds, treated contemptuously the publications of Dr Rhine's Department and of this Society, characterizing them as 'propaganda', but did not offer the puzzled readers of the *Observer* any advice as to where they would find better instruction on the subject. The other side was led by Professor Sir Cyril Burt of University College London, who is an exponent of the 'faggot' theory (he refers to the cumulative effects of a vast series of experimental and observational studies—21 May). The contest had to be called off by the Editor after the issue of 4 June, but it underlined the fact that neither party accepts the validity of the other one's line of reasoning. The exponents of the 'leaky bucket' theory disagree in principle with the 'faggot' theory, and the 'faggot' party believe that a lot of the holes found in 'buckets' by their opponents are not holes at all, but imaginary 'flaws'.

If there is any lesson to be learnt from the controversy it is that the serious student of psychical research must take infinite pains

to perfect his experimental procedures, so as to obviate the sort of criticisms likely to be made. Both sides will, no doubt, agree whole-heartedly with Professor Sir Cyril Burt's plea for far more extensive research, but it will be no use collecting facts by methods which leave the experimenter exposed to criticism. Any experimenter, before embarking on a long series of trials, should not fail to read the suggestions made by Professor Sir Cyril Burt in his paper, 'Experiments in Telepathy in Children' in the *British Journal of Statistical Psychology* (Vol. 12, Part 1, pp. 88-9, May 1959). He there urges the need for a standardized technique and recommends experimental conditions and statistical requirements which ought to be met in any serious experiment. In this field ordinary precautions are not enough. It must be borne in mind that not only the subject (sensitive), but also the agent, the experimenter, and all observers are under suspicion of fraud. The experimenter, if he is too distinguished to be suspected of ordinary fraud, is liable to be suspected of facilitating the results to please the subject, who (it may be supposed) is blackmailing the experimenter. When the results are put on paper, at every stage of handling and copying there is a theoretical opportunity for alterations, substitutions and so on. As Dr R. H. Thouless put it in his letter (20 May), '... No single experiment can be conclusive, since the experimenter may have cheated.'

In short, the experimenter must be prepared to face not only ridicule (the fate of all innovators), but also suspicion of the most damaging kind. Finally, if he eventually publishes his results, he must be ready to devote a great deal of time and trouble to answering questions about his procedures at the risk, and if any impatience is shown, of being regarded as suspiciously obstructive (see Dr Dingwall's letter—21 May—in which no instances of actual obstruction are cited).

These alarming prospects should not deter the experimenter. Many charges of cheating can be avoided in telepathy experiments by insisting on a distance between agent and percipient too great (by a large margin) to be bridged by any ordinary means of communication including, in these days, midget radio, and by arranging for records to be handled and evaluated by someone other than the experimenter not selected by him. In early exploratory experiments, it may not be possible to comply fully with these conditions, but for any trials of which the results are to be published, very strict conditions should be imposed at every stage on everyone concerned in the series.

G. W. LAMBERT

CORRESPONDENCE

Charles E. Ozanne

SIR,—In the Supplement to the *Journal* of March/April 1953 it is stated 'in the Spring [1952] an American friend of the Society who wishes to remain anonymous' placed in the hands of some Members of Council a substantial sum to meet the expenses of an enquiry into the problem of survival, and that he did this because of his 'great admiration for the work done in earlier years on this subject by F. W. H. Myers, the Sidgwicks and other leaders of the Society'. The enquiry was undertaken by Mrs Gay who arranged for sittings with a large number of mediums, at some of which 'K objects' provided by the donor and others were used. Nearly 20 experienced Members of the Society co-operated. It may now be revealed that the anonymous American friend was Mr Ozanne, to whose death reference is made in the last issue of the *Journal*. He was at the time about 87 years old, extremely vigorous and confident that he had another 10 years of life before him. Unfortunately on this point he was a trifle optimistic as he did not, in fact, live beyond 95, but he remained interested in psychical research and was mentally as keen as ever until shortly before his death.

W. H. SALTER

Apparition of a Shop Sign

SIR,—On the 20 January 1961 I was walking down a lively boulevard, looking for a well-known bookshop the name of which I could not remember. I tried hard to do so, especially as I was not quite sure whether I would be able to locate it otherwise than by name, for my memory did not supply me with much more information than that its owner was a woman, and that it was (and, as a matter of fact, still is) situated on a certain stretch—which to walk down would take about 10–12 minutes—of this long boulevard. I also remembered that, coming the way I did, the shop was to be on the left side, which afterwards proved correct.

Having walked for a few minutes, at the same time looking at every house and unsuccessfully concentrating on the forgotten name, I saw, before crossing a side-street, the name CAMILLA SPAETH written in dark-red (almost brown) italics rather high upon the wall of the corner-house on the other side. Glad to be reminded of the name I was seeking for some time I passed the house by and found the shop about 3–5 minutes further down the

boulevard. Here I was surprised to see that the well-known name was written CAMILLA SPETH (without the A); after some hesitation I decided to walk back and have another look at the same name—but with the A—on the wall of the corner-house. I did, however, not find it, which, though it seemed to me rather funny, I thought might be due to a slackening of attention after a long morning in town, or to my simply not having walked back far enough.

The same evening I looked the name up in my telephone directory which has SPAETH CAMILLA see SPETH CAMILLA (without number or anything else) and, on another page of course, SPETH CAMILLA, Buch- und Kunsthändlung etc. (with number); which means, to my mind, the name as it was used previously, and as it is used now.

On the morning of the 3 March I repeated my walk down the whole stretch in question of the boulevard, taking my time and peering at every house and wall, especially at the corners. But I did not see the dark-red italics for a second time.

I would like to add that my original inquiry at the bookshop, though not unimportant in itself, does not constitute a reason for this kind of assistance.

D. A. L. ADLER

Berlin-Lichterfelde West

Man the Immortal

SIR,—Would you be so kind as to permit me space to reply to Miss Eastman's criticism in your June issue of my book, 'Man the Immortal', as I am puzzled by her contentions? I do definitely substitute 'mental constructs' for the terms 'material object' or 'body'. For was it not Sir Arthur Eddington who wrote, 'Recognising that the physical world is entirely abstract and without actuality apart from its linkage to consciousness' (i.e. via the sensory nerves) and Sir James Jeans who also wrote, 'We reduce particles to waves and these are wholly mental constructs.' Jeans definitely gave it as his opinion that the world was more mental than material. Then in his Riddell Memorial lectures in 1958 the world's probably greatest neurologist, Sir Russell Brain, piled Pelion on Ossa by saying, '... The perceptual world, therefore, if I may use the term to describe the whole realm of our perceptual experience, is a construct of the percipient's brain.' In the course of the same lectures Sir Russell said, 'If the red colour of the book on my table is generated by my brain, then we must abandon the common-sense realist view of space.'

Miss Eastman is questioning not what I say but the dicta of some of the world's greatest brains. If she will refer to my quotation on page 27 of my book, she will find in this translation from the ancient texts of possibly 3,000 years ago that the Buddha must have formed his doctrine from knowledge precisely similar to that which Rutherford gained, even to the characteristic 'spin' of the electron. He too with Eddington, Jeans and Brain, was evidently well aware of the deception imposed upon the brain (or mind) by the sensory nerves and the consequent insubstantiality of all the material. Is it not the modern scientific view that all the material is energy, and insubstantial?

Personally I would not dare to question the knowledge of these great minds. It is not nonsense, but fact, which, though new to us, we must accept in place of the old out-moded classical physics and must therefore apply throughout all our researches.

I would add one thing more. The book has been most carefully edited by Professor W. Y. Evans-Wentz, a master of Buddhist doctrine and author of the well-known Oxford Tibetan series, and what the book says, therefore, on that subject is not to be questioned. Again, it is not I who say it. Let me end by saying that I should not have envied Miss Eastman her task.

JOHN N. EAST

The Spontaneous Cases Report

SIR,—As regards Miss Green's reaction to my letter in the *Journal* of June, 1961, may I answer the question she put me in the last paragraph of her response (p. 101)?

We certainly do not know anything about the way telepathy, extrasensory perception, etc. functions, though I feel pretty certain that there is little foundation for the naïve agent→percipient transference conception still held by a number of researchers. But what I do know is that since the S.P.R. began their ESP experiments only those hits were regarded as indicative of ESP and counted as such which accurately conformed with the target. I do not believe that Dr Rhine would dare to claim a \square as a hit when the target to be perceived telepathically was a +. By the way Miss Green states her case, I feel that she would not have any real objection in accepting the square as a telepathic impression of the cross! Both are indicated by a number of lines, and I must say that these two diagrams show more resemblance to one another than the boy's 'funny old man in the bathroom' to his grandfather.

In the 'Phantasms of the Living' one may find several cases of

young children perceiving or experiencing some kind of crisis-apparition. As far as I am aware only cases are quoted where the child recognized or identified the apparition. For instance: (vol. II, pp. 248-9), a 5-years old boy sees an apparition against the ceiling of the room and cries out: 'Papa, Papa, there is grandfather.' At that moment the grandfather died: (vol. I, case 48). A 3-years old girl more than once called out: 'Davie is drowned.' Mother looks at the clock. It appears that at that very moment Davie was drowned in a lake at a distance of 300 miles (vol. II, case 330). Infant girl, 2 years and 5 months old sees an apparition of her dead mother, crying out 'There is mother'.

I am sorry, and I may be an old-fashioned parapsychologist, but I cannot but retain my conviction that psychical research will very soon find itself in a quandary, if we should go on officially printing cases as indicative of paranormal cognition on such slender evidence as Miss Green did in the case under discussion.

G. ZORAB

The Hague

Psychological Resistance to ESP

SIR,—Erich Neumann, in 'The Origins and History of Consciousness', says, after three hundred pages of fascinating and elegant dissertation on the emergence of ego-consciousness:

The conquest of fear is therefore the essential characteristic of the ego-hero who dares the evolutionary leap to the next stage and does not, like the average man who clings to the conservatism of the existing system, remain the inveterate enemy of the new.

I feel that nothing need be added to these words except Dr Neumann's book.

JOCELYN PLAYFAIR

OBITUARY

RUDOLF TISCHNER

The years following the First World War witnessed a remarkable outburst of German activity in psychical research, and in this our late Corresponding Member, Doctor Rudolf Tischner, played a significant part. Interest was mainly centred on the physical phenomena, and particularly on the much debated phenomena of materialization. Tischner was not indifferent to this side of

psychical research, but he took a very wide view of our subject. He first became well known by his *Telepathie und Hellsehen* (1919), an expanded edition of which was in 1925 translated into English under the title *Telepathy and Clairvoyance*. He used the term telepathy in the familiar sense, but divided clairvoyance, which had not then acquired its precise, modern meaning, into (1) Cryptoscopy, 'the vision of normally, invisible, hidden objects near at hand', (2) Clairvoyance in Space, (3) Clairvoyance in Time. Much less was at the time known in Germany than in England on these subjects, and his book, with the very large number of experiments conducted by him and carefully recorded, did a great deal to enlighten his Continental public. Later experiments in both subjects, conducted in several countries with other methods, may have to some extent superseded his results, but his vigorous and pungent comments still repay reading.

When in 1959 Tischner reached the age of 80 the Council sent him their congratulations and good wishes, together with a volume containing the Presidential Addresses and signatures of all the living Presidents and ex-Presidents. Professor Broad also contributed to the *Journal* for March of that year a biographical sketch, to which I would only add a reminiscence of my first meeting with him. It was at the Paris Congress in 1927, when most cordially and emphatically he expressed the gratification he had felt when in 1923 he became a Corresponding Member, which was, he said, the earliest public recognition of his work.

W. H. SALTER

EXCERPTA

From Carl Gustav Jung: 1875-1961, 'Exploring Uncharted Territory' by Renée Haynes, The Tablet, 17 June 1961.

WITH the death of Jung there goes into the immutable past the last and greatest of that great trio who made the Western world fully and vividly aware that the unconscious mind exists. Earlier thinkers, from Augustine and Averroes to William James and F. W. Myers, had discussed its activities and had even coined terms such as 'the subliminal consciousness' for this source; but it rested with Freud, Adler and Jung, formed in the discipline of medicine, to announce, to explore and to chart an interior New-found-land as startling to the twentieth century as the exterior continent had been to the sixteenth, despite the ancient and persistent reports of

earlier travellers. Though they emphasized different aspects of the terrain, though their maps were drawn to different scales, though one might see in a rock a phallic symbol, another a ladder to success and the third an archetypal image of the *Magna Mater*, all three bore witness to this vast, strange, hidden area of human experience.

Of the three, Jung was the least conditioned by the rigid assumptions of nineteenth-century science; though even he had to work out, in the close reasoning of his essay on synchronicity, an intellectually satisfying argument against that belief in material determinism, that 'iron-law of causality', which does not weigh quite so heavily on a generation that has had to accept the notion of small-scale a-causal events in nuclear physics.

. . . It is significant to note—since language not only expresses but stimulates thought—the key phrases with which each of these men enlarged knowledge. Much of their terminology of course grew up piecemeal between them with the need to name and link new discoveries and interpretations. It can be fairly said though, that we owe to Freud the idea of the Oedipus complex; to Adler that of the inferiority complex and its over-compensation; and to Jung—how many more. The words 'introvert' and 'extravert'; the classification of psychological types (fruitfully linked by Kretschmer and others with physiological types); the notion of some hidden, irrational image of the opposite sex working like yeast in the emotional life, the *anima* in men, the *animus* in women; the concept of the four main psychological functions, thought, feeling, intuition and sensation, interacting differently in each human being, and, most startling of all, the idea that they arise from a collective unconscious mind; all these come from the work of Jung.

. . . The idea of the collective unconscious has become so familiar that one tends to forget how astonishing it is. Despite his medical training Jung does not seem to have made much attempt to work out any theory of mind-body relationship in this connection, or to trace in detail any link with the given structure of brain and nervous system inherited by every generation of human beings. He simply recorded the fact that he was continually finding archaic material—legends, symbols, images—in the dreams of patients who had never had any waking knowledge of it; and concluded that these emerged from some vast, living racial memory . . . it looks as if the collective unconscious were in fact the human mode of the group-mind posited by that eminent biologist Sir Alister Hardy, F.R.S., as 'a general *subconscious* sharing of a form and behaviour design—a sort of psychic blue-print—between members

of a species' with 'a racial experience of habit form and development'. The implications of this idea for intellectual disciplines as diverse as anthropology, political science, philosophy and theology are extraordinarily interesting and stimulating. . . .

It is to a great man, and to a great thinker that we say good-bye; a man full not only of years and honours, but of ideas that will not die with him. *Vale atque ave.*

NOTICES

WE regret to have to record the death, on 2 June 1961, of Theodora Bosanquet at the age of 80. Miss Bosanquet is perhaps best remembered as the secretary and amanuensis to Henry James from 1907 to 1916. She was later the literary editor of *Time and Tide* founded by her great friend and companion the late Lady Rhondda. As a deeply believing Christian with a strong bent towards mysticism she was always interested in the investigation of paranormal phenomena and has been for many years a member of this Society. She was co-opted a member of Council in 1945, on which she served for several years. During the War she was also Editor of this *Journal*.

Fragments of Inner Life by F. W. H. Myers (Society for Psychical Research, 1961)

For the first time this autobiographical sketch of some 43 pages is available in full to Members of the Society, and to others, who are interested in the personal life of Frederic Myers. In particular it will interest those who are familiar with the 'Myer's Envelope' episode. The bearing of it on that mystery is explained in detail in Mr W. H. Salter's paper, *F. W. H. Myers's Posthumous Message in Proceedings*, 52, Part 187, October 1958 — see especially pp 2-7 and 23-25. It must suffice here to recall that the text now reproduced is taken from one of the very few surviving copies of the original (privately printed) edition. That copy was given by Myers in 1893 to Professor Henry Sidgwick, in a closed envelope. He gave it unopened to his wife Mrs Sidgwick, who put it away. Myers died on 17 January, 1901, and, soon after, Mrs Verrall received by automatic writing some messages purporting to come from Myers, in which he referred to a 'sealed packet' and the place where it was kept. By then Professor Sidgwick was dead and Mrs Sidgwick had forgotten where the packet containing the booklet had been put. By following the clues given in Mrs Verrall's script it was discovered and given by Mrs Sidgwick to Alice Johnson. She gave it to Mr W. H. Salter, who has now made it available for reproduction. The cost of this edition (500 copies) has been met by private

subscription. Single copies may be obtained, price 5s. od. post free, by Members and Associates, on application (with Postal Order) to the Secretary. If after meeting such applications any copies remain, applications from others will be met as far as possible. All receipts will be retained by the Society and will be used to obtain further copies if the total demand requires a fresh impression.

We hope to publish in our next issue an obituary of the late Carl Jung written by our Corresponding Member, Dr C. A. Meier of Zurich.

ESP MACHINE

MEMBERS are advised that an electronic target selector is available at the Society Offices for the use of experimenters who may be interested in carrying out tests by this means. The apparatus has been kindly loaned by Mr W. D. Gilmour who designed and constructed it for his own private experiments. It employs dekatrons for target selection and indication of the number of trials and successes. It is a self-contained equipment and appears to operate satisfactorily within the limits of the purpose for which it was designed. Instructions for use as given by Mr Gilmour are available at the office and any further queries regarding operation can be addressed to J. H. Cutten.

ADDITIONS TO THE LIBRARY

Religious Behaviour by Michael Argyle. Routledge & Kegan Paul, 1958. Price 25s.

Statistical Calculation for Beginners by E. G. Chambers. Cambridge University Press, 1958. Price 17s. 6d.

The Study and Practice of Astral Projection by R. Crookall. Aquarian Press, 1961. Price 30s.

The Supreme Adventure by R. Crookall. James Clarke & Co. Ltd., London 1961. Price 18s. 6d.

William King's Profession by Charles Drage. Anthony Blond, London, 1960. Price 21s.

Challenge of Psychical Research by Gardner Murphy. Harper, New York, 1961. Price \$6.00.

Rudi Schneider by Harry Price. Methuen, London, 1930. *Secondhand.*

Okkulte Phänomene by Alois Wiesinger. Verlag Styria, Graz, 1952. *Secondhand.*

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